Planting the knowledge seed
Adapting to climate change using ICTs

Concepts, current knowledge and innovative examples

Editors

PATRICK P KALAS
Swiss Agency for Development and Cooperation

ALAN FINLAY
Open Research

bco
building communication opportunities

ISBN: 92-95049-72-1

September 2009

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Building Communication Opportunities (BCO) Alliance

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Preface

Raising the Voice - Rural women record community concerns to be debated with local decision-makers on local radio. Source: AMARC

This publication emerged from a Building Communication Opportunities (BCO) Alliance learning event on information and communications technologies (ICTs) and climate change held in Johannesburg on 22 December 2008.

The BCO Alliance is a partnership of international development organisations working on information, communications and development. Partners believe that information and communications are of crucial importance to achieving sustainable and equitable development and that the use of technologies such as the internet, radio and mobile devices present opportunities for people living in poverty to voice their concerns and shape their futures.

Learning events – which include members of the alliance and their local partners – are part of the BCO "methodology". They bring together a mix of practitioners, people involved in development assistance, and people from different sectors, some based inside developing countries and some in the developed world. They constitute a space for learning and debate.

BCO partners have been pioneers in integrating information and communication in development work, and among the first to consider how ICTs can both enhance existing development efforts and present new opportunities and challenges. It is therefore not surprising that they have also been among the first to confront the issue of ICTs and climate change.

We hope that this publication serves as an introduction to others concerned with sustainable development. We are all users of technology, and therefore we can all be part of the problem; but, as you will read, we can also be part of the solution by actively using ICTs to help communities deal with the challenges posed by climate change. We also need to change the ways in which ICTs are produced, consumed and disposed of.

I would like to thank the people who made the BCO learning event on ICTs and climate change possible. From the Swiss Agency for Development and Cooperation (SDC) they are SDC Deputy Country Director in South Africa Richard Chenevard; Patrick Kalas, the programme manager in SDC's Knowledge and Learning Processes Division who has, after a request voiced by BCO partners, been the driving force behind the event and the publication; and Gerolf Weigel, outgoing head of SDC's ICT for Development Division, whose experience and vision provided both depth and breadth to the deliberation within the alliance.

I also want to thank the following people: all the presenters; Alan Finlay, for his indispensable work in recording the event and helping compile this publication; Karel Novotný, the Association for Progressive Communications (APC) Knowledge Sharing Projects coordinator, for assisting Patrick to shape the agenda; and Eunice Mwesigwa, who was responsible for logistics. One of our presenters, Naimur Rahman from One World South Asia (OWSA), deserves a special note of thanks. Based in Delhi, and unable to travel to South Africa, he participated remotely. It seemed very apt that we were using technology in a way that reduced the carbon footprint of the event.

Finally, I want to acknowledge the ongoing support and participation of BCO partners who have been actively involved during the term of APC's coordination of the partnership (2006 to 2008). They are the Department for International Development of the United Kingdom (DFID), the Humanist Institute for Cooperation with Developing Countries (Hivos), the International Institute for Communication and Development (IICD), OWSA, One World Africa (OWA), Panos London, Panos South Asia, the World Association of Community Radio Broadcasters (AMARC), and SDC. It is their experience that has made BCO the important learning space it has been over the years.

BCO partner institutions, and the individuals who have represented them, have all contributed their time and ideas and helped to make BCO a small but active learning space. As with all networks, the level of activity in BCO fluctuates. Partners are all incredibly busy. However, whenever a learning opportunity presents itself, BCO partners can be relied on to share and listen with generosity and openness.

This publication serves as a record of this commitment to shared learning.

Anriette Esterhuysen
Executive director, APC – host institution of BCO coordination from 2006 to 2008

1. Overview of publication

"Technology's reach extends humanity's grasp."– Anonymous

This publication invites you to think outside the box. It takes you on a journey to explore the practical linkages between climate change, access to and sharing of information and knowledge, communication for development and ICTs in general. More specifically, it considers how everyday information and communication tools such as radios, mobile phones, personal computers, the internet and interactive media can help reduce the risks of climate change faced by the most vulnerable segments of the global village through providing access to and the sharing of timely information and critical knowledge.

The target audience of this publication are not experts on ICTs or climate change, but rather development practitioners and policy makers overall: those who will be faced with the need to interpret the demands of climate change, and apply these to their work in the context of the possibilities afforded by ICTs.

More specifically, the publication aims to:

- Provide an overview of linking the strategic use of ICTs to climate change
- Summarise the discussions and conclusions of the BCO Learning Day on ICTs and Climate Change held in December 2008 in Johannesburg, South Africa
- Demonstrate innovative applications through concrete project examples
- Start a dialogue and stimulate a debate about the added value and applicability of ICTs in climate change programmes.

To set the context and significance, the following facts are worth mentioning:

- Climate change has been coined the "defining human development challenge of the 21st century"[1] while climate stability has been classified as a key "global public good" by the International Task Force on Global Public Goods, because it is a good that "benefits all countries and, therefore, all persons."[2]
- Equally, access to knowledge joins the list of key global public goods according to the same task force, while the Organisation for Economic Co-operation and Development (OECD) calls for an "integration of global public goods into development strategies."[3]
- The OECD recognises that ICTs "have become major drivers of economic growth and social development. ICTs are crucial to poverty reduction and can improve access to health and education services, as well as create new sources of income and employment for low-income populations."[4]

[1] United Nations Development Programme Human Development Report 2007/2008 Fighting climate change: Human solidarity in a divided world (New York: UNDP, 2008) hdr.undp.org/en/reports/global/hdr2007-2008

[2] International Task Force on Global Public Goods: www.gpgtaskforce.org/bazment.aspx

[3] Organisation for Economic Co-operation and Development Reflection Exercise: Investing in Development – A Common Cause in a Changing World (Paris: OECD, 2009)

[4] Organisation for Economic Co-operation and Development Internet Access for Development (Paris: OECD, 2009) www.oecdbookshop.org/oecd/display.asp?lang=en&sf1=DI&st1=5KZBVK64FV6G

- According to the International Telecommunication Union (ITU), global mobile phone subscribers will reach 4.5 billion by 2012, with most users having an income of less than USD 2 a day.
- After years of lobbying, community radio legislation passed in India and Bangladesh has opened new communication channels in remote areas in line with the right to access information, and resulted in the inclusion in decision-making processes of marginalised groups and communities.

Climate change, access to knowledge, and evolutions in ICTs such as mobile phones and interactive community radios are closely linked. Risk and vulnerability can be reduced through ICT-enabled information provision and the facilitation of knowledge sharing, which can ultimately help enhance coping strategies and save lives. Despite the obstacles and challenges to equitable access in many developing countries, concrete examples demonstrate that opportunities to adapt to climate change using ICTs exist. The principal argument put forward in this document is that the strategic use of ICTs within climate change programmes presents an innovative way to help make those efforts more efficient and effective.

Overview of chapters

The introductory chapter frames the issue by conceptualising what ICTs are, how they have been applied within ongoing development programmes, and how the linkages to climate change can be established through building on existing, practical experiences. Furthermore, the linkages to and potential of communication and interactive media are explored within the context of climate change. The chapter also highlights that there is a need for systematic awareness raising and capacity development at all levels to embrace the application of ICTs as strategic tools within climate change programmes.

This is followed by a concrete demonstration of innovative project examples from Africa, South-East Asia and Latin America showing how ICTs can be utilised as strategic tools to contribute to climate change adaptation programmes.

A summary of the BCO Learning Day on ICTs and Climate Change held in December 2008 is then provided, including key conclusions and recommendations that emerged.

In conclusion, the publication summarises the key points emerging from the conceptual overview, the learning day and the practical examples, with a few actionable recommendations.

It is important to note that this publication is just the start of the discussion. In order to facilitate a continuation of this dialogue, an interactive web platform[5] has been established inviting you to share your reactions, experiences and questions. We hope you find this publication stimulating and, most importantly, practical, in order to translate this food for thought into tangible action. And since eating tends to further wet one's appetite, we invite you to consider visiting and contributing to the interactive web site and look forward to continuing this conversation with you.

Patrick P. Kalas and Alan Finlay

[5]www.bcoalliance.org/Climate-Change

2. Including the excluded: Connecting climate change and ICTs [6]

Patrick P. Kalas, Programme Officer, Swiss Agency for Development and Cooperation (SDC)

2.1. Introduction

The United Nations calls climate change "the defining human development challenge of the 21st century."[7] It constitutes a key multiplier and amplifier of current development challenges, further hindering efforts to reduce suffering and alleviate poverty. Vulnerability patterns of the poor and marginalised are fundamentally changing through climate change, while those least responsible and most affected are least informed about the likely impact on their livelihoods and are systematically excluded from policy discourses.

ICTs are *enabling tools* that can increase the effectiveness and efficiency of development programmes. If integrated strategically, ICTs – including community radio, knowledge centres, mobile phones and interactive media – can contribute tangibly to climate change mitigation and adaptation efforts.

Key points on ICTs and climate change

- Climate change is not a new development phenomenon but *amplifies and magnifies existing development challenges*, hindering efforts to reduce suffering and alleviate poverty.
- Climate change is a *social justice issue*. The most vulnerable are the least responsible for its causes, but will be most affected while being least informed about the impacts on their livelihoods and generally excluded from policy discourses.
- *Strategically integrated* ICTs, such as community radios, mobile phones, knowledge centres and interactive media, are *enabling tools* that help to reduce climate change vulnerability and risk, while including the voices of those most affected for political advocacy.
- ICTs contribute tangibly to climate change mitigation/adaptation strategies through p*roviding access to relevant information, raising awareness at the grassroots level, and facilitating learning* and *practical knowledge sharing at the community level,* while *empowering the poor and marginalised to raise their voice for political accountability and concrete action.*
- Current mainstreaming approaches that integrate ICTs as a strategic tool into development programmes (e.g., education, health, governance) can be directly applied to climate change strategies.
- A *multi-stakeholder approach* is central to ICT climate change mitigation and adaptation interventions.
- There is a need for *systematic awareness raising and capacity development* among all development stakeholders on how to integrate and utilise ICTs in climate change programmes.

[6] While this conceptual overview relies on established institutional concepts at SDC, it ultimately represents my personal views. I wish to acknowledge two key personalities who have been instrumental over the years in helping to shape our current knowledge and practical understanding about the strategic use of ICTs in development and poverty alleviation: Ambassador Walter Fust, former Director-General of SDC, and Dr. Gerolf Weigel, former head of the ICT4D Division at SDC. Their extraordinary vision for a people-centred approach to ICTs in development and subsequent courage to implement this vision remain an inspiration to the field at large and to me personally. I would like to also express my appreciation to the various BCO partners who have asked me to make this editorial contribution on behalf of the Alliance. Behind each partner of this Alliance there are extraordinary human beings who share a tireless commitment to and belief in the potential of integrating ICTs for poverty alleviation and social justice.

[7] United Nations Development Programme Human Development Report 2007/2008

ICTs *help reduce the vulnerabilities and risks* faced by the poor and marginalised due to climate change by:

- Raising awareness at the grassroots level
- Enabling access to relevant information and locally applicable knowledge to help save lives
- Facilitating learning and practical knowledge sharing
- Empowering the poor and marginalised to raise their voice for political accountability and meaningful action.

Concrete experiences of applying ICTs as strategic tools in current development programmes (education, health, agriculture, governance) present promising results that can be *directly applied to climate change mitigation and adaptation programmes*. There is, however, a need to systematically raise awareness and develop capacity among all development stakeholders on how to increase the effectiveness and efficiency of climate change adaptation and mitigation programmes using ICTs.

The aspiration of this section is not to build a conclusive argument on the subject of ICTs and climate change, but rather to set the conceptual stage to build initial awareness, while stimulating debate within the development community on the concrete and practical linkages between the two.

The primary focus here – as is the case with the publication as a whole – is on climate change *adaptation* with introductory linkages only to climate change mitigation programmes.

2.2. What is at stake?

"For millions of the world's poorest people, climate change is not a future scenario, it is already undermining their efforts to escape poverty and reinforcing their vulnerability." – UNDP Human Development Report 2007/2008

Expected effects of climate change

400 million more malaria cases globally

600 million more cases of malnutrition

332 million internally displaced people due to rising sea levels

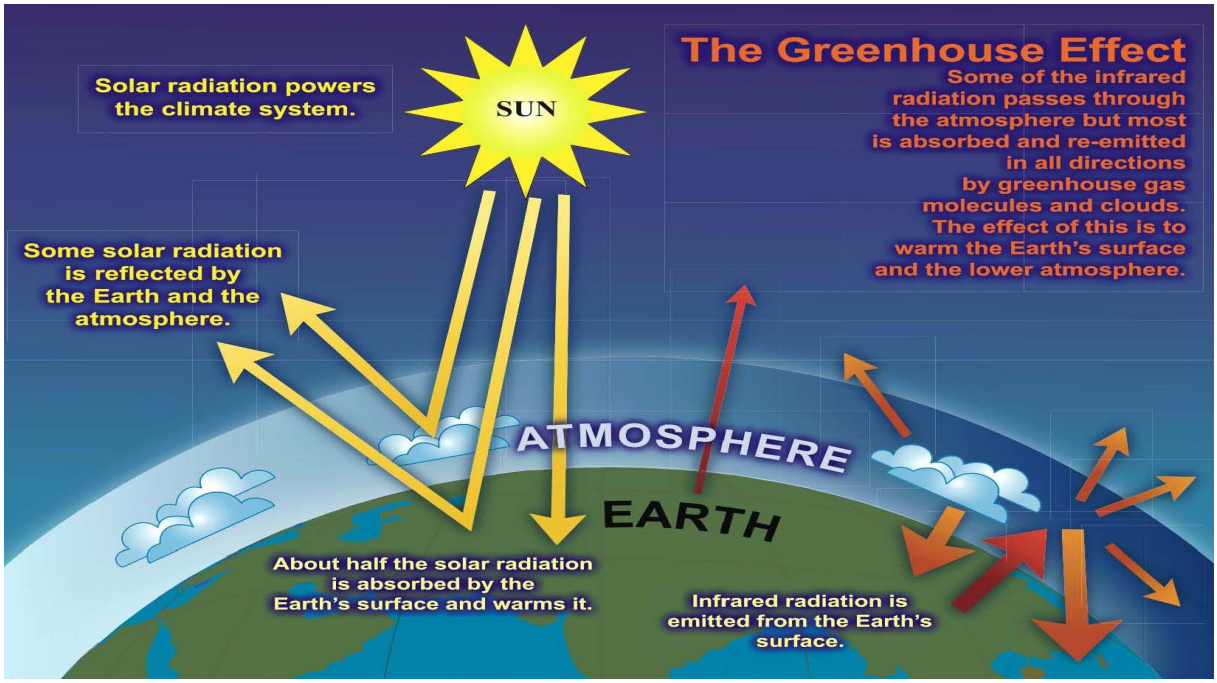
1.8 billion more to face water stress

Source: UNDP Human Development Report 2007/2008

As we know, climate change is caused by a rise in greenhouse gases[8] that has led to increased concentration of these gases in the atmosphere, which in turn has led to the greenhouse effect depicted in Figure1.

The change in global temperatures has resulted in changing weather patterns with some devastating results predicted. This phenomenon has specific relevance in the poverty alleviation context as it multiplies and amplifies current development challenges. Climate change also reinforces existing vulnerability patterns as the exposure to risk becomes more frequent, intensive and unpredictable. Furthermore, climate change is clearly a threat to humanity as a whole, but it is the future generations and mostly the poor and marginalised – those constituencies with the least responsibility for the ecological debt industrialised nations are running up – who will face the most immediate and severe consequences.

Figure 1: The greenhouse effect



Source: Intergovernmental Panel on Climate Change Working Group I Climate Change 2007: The Physical Science Basis Geneva: IPCC, 2007

Climate change is therefore not solely an environmental issue: it is also a social justice or "climate justice" issue, as those least responsible are the most affected, the least informed about the impact on their livelihoods, and are systematically excluded from high-level decision-making discourses and processes.

[8] Greenhouse gases include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_20) and chlorofluorocarbons (CFCs).

Given this context, it is argued that ICTs can fundamentally empower people through access to critical knowledge, awareness raising and knowledge sharing, even within the most remote communities. ICTs can carry the voice of the poor and marginalised to the level of decision makers in order to demand action from their leaders to produce lasting and large-scale change in policies.

Key developmental facts about climate change

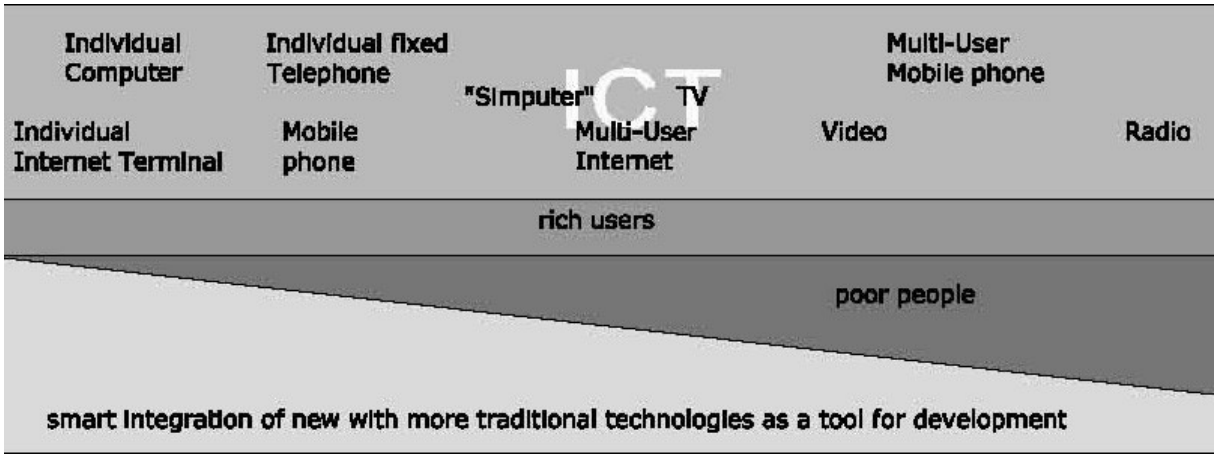
- The poor and marginalised are least informed about the potential impact of climate change on their livelihoods, therefore scientific jargon and high-level concepts about climate change need to be demystified to make them comprehensible and applicable to the layperson.
- Climate change fundamentally changes vulnerability patterns for the poor and marginalised
- The poor and marginalised are the most vulnerable with the least resources to adapt to climate change, calling for basic awareness raising, capacity development and knowledge sharing among communities
- Coping solutions and adaptation strategies need to be localised and decentralised with grassroots interventions to be initiated.
- The voices of those most affected by climate change are not sufficiently included in the policy debate with the subsequent search for solutions and informed decision making.
- Vulnerability and risk can be substantially reduced by enabling access to and the sharing of information and knowledge.

2.3. Using ICTs as an enabling tool for more effective development programmes

"Knowledge is like light. Weightless and intangible, it can easily travel the world, enlightening the lives of people everywhere. Yet billions still live in the darkness of poverty- unnecessarily." (World Development Report 1999)

ICTs encompass the full range of technologies, including traditional and emerging devices such as community radio, television, mobile phones, computer and network hardware and software, the internet, satellite systems, and podcasting.

Figure 2: ICT for development: Range of technologies and relevance to users



Source: Weigel & Waldburger (2003)

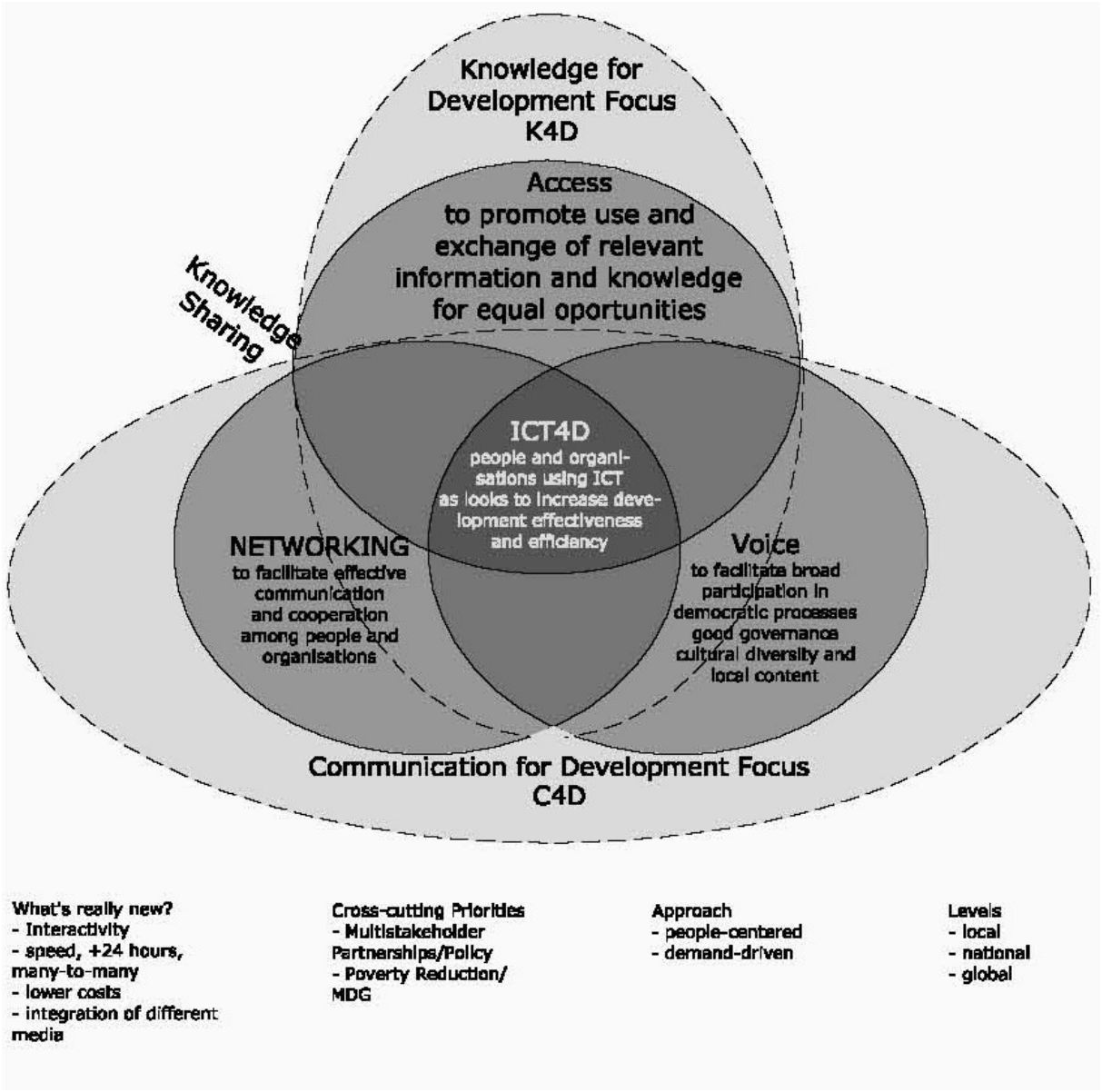
In a nutshell, there are three overlapping areas of concern when considering ICTs as a strategic tool for development:

- **Access**: Using ICTs to facilitate access to and sharing of relevant information and knowledge.
- **Voice/communication**: Using ICTs to strengthen the voices of poor, excluded and disadvantaged people generally, but particularly in decision making.
- **Networking**: Using ICTs for networking and communication while fostering multi-stakeholder partnerships to achieve effects on a larger scale (i.e., upscaling).

Much of the conceptual groundwork covering the link between ICTs and development (or ICT4D) has been done by Weigel and Waldburger in their influential 2004 publication ICT4D – *Connecting People for a Better World: Lessons, Innovations and Perspectives of Information and Communication Technologies for Development.*[9] Figure 3 presents a diagram that the authors have developed to map the use of ICTs as tools for development.

[9] Gerolf Weigel and Daniele Waldburger, eds. ICT4D – Connecting People for a Better World: Lessons, Innovations and Perspectives of Information and Communication Technologies for Development (Berne: SDC and GKP, 2004) www.globalknowledge.org/ict4d

Figure 3: ICT for development: Key dimensions and main goals



Source: Weigel & Waldburger (2003)

A few additional points are worth noting:

- **ICTs serve as a strategic tool and catalyst for change by increasing efficiency and effectiveness**: When referring to ICTs as a *strategic tool*, it is implied that the tool is an *integrated component of a development programme*. Therefore, use of ICTs as tools embedded within existing development programmes makes these interventions more efficient and effective (e.g., offering increased access to market information through a mobile phone to increase income; increasing the reach of an HIV/AIDS prevention campaign through the use of interactive community radio). ICTs are therefore considered a *catalyst for change* within development sectors such as education (e.g., distance learning, e-learning), health (e.g., e-health, mobile health, telemedicine), governance (e.g., empowering citizens through increasing participation and inclusion in decision-making processes; more accountability/transparency through access to information) and rural development (e.g., access to market information).

- **Beyond infrastructure**: The effective use of ICTs is not just a question of infrastructure. It is not only a question of hardware but also software. It also requires an appropriate *institutional and regulatory framework*, the *development of human capacity* and *relevant content.*
- **Convergence is key**: Convergence between different ICTs is key for more inclusion and interactivity. For instance, community radio becomes more participatory as people use mobile phones to voice their opinions.
- **ICTs are necessarily embedded in broader poverty reduction strategies**: ICTs are a component of a broader strategy for sustainable development and should not be seen as a panacea for all development problems.
- **People-centred and demand-driven application**: People come first, technology second. Technologies are a means to the end and any intervention needs to start with the development question rather than a technological question. Combined with the embedded approach within broader development strategies, positive impacts can emerge.
- **A multi-stakeholder partnership approach is necessary for effective ICT implementation and upscaling**: The effective use of ICTs is not just a question of infrastructure and hardware. It also requires an appropriate institutional and regulatory framework, and the development of human capacity, software and relevant content, amongst other things. This means that broad-based ICT roll-out programmes require a multi-stakeholder approach, with all contributors and affected parties around the same table – including beneficiaries. Bilateral donor agencies can play a key role as a "neutral broker" or "facilitator" of these multi-stakeholder partnership processes.

2.4. The role of ICTs in meeting the climate change challenge[10]

Key linkages about ICTs and climate change

1) ICTs for mitigation

- Production and use of more **energy- and CO_2-efficient ICTs** (see: www.climatesaverscomputing.org), and the promotion of less energy-consuming technology transfer to developing countries, thereby contributing to the decarbonisation of the economy. Role for development cooperation, regulators and private sector.
- **New technologies** such as video conferencing and voice over internet protocol (VoIP) technologies which have the potential to reduce travel and subsequent emissions.
- **Better waste management** and recycling (see: http://ewasteguide.info).

2) ICTs for adaptation

3) ICTs for natural disaster prevention, preparedness and risk management: ICTs offer tools relevant for data analysis, satellite imaging and vulnerability assessment (see: instedd.org), coordination of emergency efforts, and dissemination of locally specific and relevant information (e.g., early-warning systems, meteorological information for preparedness disseminated through telecentres or mobile phones).

4) ICTs as information and communication and empowerment tools (including community radio, knowledge centres, mobile phones, internet, internet-based media) can be used for both mitigation and adaptation efforts in order to:

- **Inform and raise awareness** (e.g., media campaigns) at all levels of society – including the poor – about the effects of climate change.
- **Raise the voices** of grassroots communities and those most affected by climate change – again, mostly the poor in developing countries – at the local, national and international level, and carry them to the decision makers to demand actions from their leaders and political accountability (advocacy function/vertical linkages).
- **Facilitate networking** and building of coalitions and help define positions (including for mitigation and adaptation strategies).
- **Capacity building** through e-learning as vertical learning and knowledge sharing as horizontal, peer-to-peer learning.

Source: SDC ICT and Climate Change Fact Sheet

ICTs are interlinked with climate change in a number of ways. They are most obviously used for a range of technical interventions, from high-level satellite weather mapping to scientific research, data analysis and projections and vulnerability assessments.[11] For instance, the Google Foundation is supporting a programme called Innovative Support to Emergencies Diseases and Disasters (InSTEDD).[12] However, ICTs also contribute to climate change. According to a study by Gardner Consulting, the use of ICTs makes up 2% of global emissions, the same amount as the airline industry. At the same time, ICTs are used as knowledge tools to provide access to and sharing of information about climate change in projects and communities, at the global and local levels.

The UN categorises the response to climate change into mitigation and adaptation responses. Climate change mitigation means reducing global emissions while climate change adaptation means preparing while reducing the vulnerabilities and risk.

[10] I would like to acknowledge my former colleagues in the SDC ICT4D Division, Steven Geiger and Alexander Widmer, who have been involved in compiling the SDC ICT and Climate Change Fact Sheet.

[11] See also http://www.itu.int/ITU-T/climatechange/

[12] instedd.org

ICTs and mitigation - Mitigate the vulnerability

There are three main areas of mitigation that are relevant to ICTs:

- The production and use of more energy- and CO2-efficient ICTs,[13] including the transfer of this technology to developing countries. This will contribute to the decarbonisation of the economy. There is a role here for development cooperation between countries and regions.
- The effective use of new technologies such as video conferencing and voice over internet protocol (VoIP) which have the potential to reduce the emissions from travel.
- Better waste management and recycling.[14]

ICTs and adaptation - From exclusion to inclusion

ICTs, with a focus on information and communication (including the media), are tools that can facilitate systematic awareness raising and knowledge sharing about the effects of climate change and possible coping strategies at all levels of society, but in particular in the world's most vulnerable groups.

When it comes to adaptation, the emphasis is mainly on reducing risk and vulnerability while increasing coping strategies at the local level. For instance, risk and vulnerability at the local level can be significantly reduced by providing people with innovative early-warning and alert systems that are enhanced through ICTs to reach more people and therefore save lives.[15] In addition, public awareness is a critical factor. The UN Framework Convention on Climate Change (UNFCCC) in Article 6 explicitly highlights education and public awareness on climate change as a key objective, namely to "promote and facilitate public access to information on climate change and its effects."

ICTs, with a focus on information and communication (including the media), are tools that can facilitate systematic awareness raising and knowledge sharing about the effects of climate change and possible coping strategies at all levels of society, but in particular in the world's most vulnerable groups.

Awareness raising is used here to refer to a more traditional, one-way and often "top-down" information exchange, whereas knowledge sharing represents a two-way peer-to-peer horizontal exchange. The potential of ICTs to facilitate these two kinds of information and knowledge flows include:

- Informing and raising awareness on the effects of climate change.
- Reaching remote villages through dissemination, hence enhancing the effectiveness of early-warning systems for disaster prevention and risk reduction.
- Identifying, building, documenting and sharing locally rooted and contextualised adaptation strategies and solutions among communities.
- Facilitating local risk assessments and making communities part of the process to mobilise local knowledge and develop local coping mechanisms.
- Creating a repository of information on disaster management and risk mitigation.

[13] www.climatesaverscomputing.org
[14] ewasteguide.info
[15] For an overview of the specific application of ICTs in disaster management see Chanuka Wattegama ICT for Disaster Management (New York: UNDP, 2007) or the SDC Disaster and Risk Reduction (DRR) newsletter focusing on ICT

2.5. ICTs, climate change adaptation and development[16]

The key message emerging from the conceptual and practical linkages between ICTs and climate change suggests that there are significant lessons to be learned from existing good practices of integrating ICTs as a strategic tool in development programmes. In other words, the ICT4D community is not "jumping on the climate change bandwagon"; rather, the existing and proven approaches in other development sectors can be directly applied within climate change programmes to render them more efficient and effective.

The use of ICTs for climate change adaptation can be mapped onto Weigel and Waldburger's three categories, as shown in Table 1.

Table 1: Use of ICTs for climate change adaptation

	ICTs for development	**ICTs and climate change**
	Using ICTs as strategic tools in development and climate change programmes (i.e., adaptation) to increase efficiency and effectiveness. Suggested ICT tools to support local information and knowledge sharing including community media platforms (e.g., interactive community radio), mobile phones, telecentres and knowledge centres.	
Access	Using ICTs to facilitate access to and sharing of relevant information and knowledge.	Access to relevant information (awareness raising) and knowledge (locally embedded know-how) to develop coping strategies to reduce risk and vulnerability.
Voice	Using ICTs to strengthen the voice of poor, excluded and disadvantaged people in decision making and for self-expression.	Strengthening the voice of those most affected by climate change in decision-making processes so that there is political accountability and meaningful action.
Networking	Using ICTs for networking and human communication while fostering multi-stakeholder partnerships to scale up initiatives.	Knowledge sharing among communities, individuals and institutions to identify and share good practices and coping strategies. Creating multi-stakeholder partnerships for roll-out.

[16] Annex 1 provides a conceptual overview of the "5 I's of ICTs and Climate Change".

2.6. Beyond access: The role of voice, communication and the interactive media

It is worth highlighting one dimension within the ICT for development concept, namely that communication, voice and interactive media play an equally important role in parallel to access to information and knowledge. There is a need to "make sense" of the complexity surrounding climate change at the global level and the local level. By definition, communication is a participatory, two-way process, enabling the inclusion of all people in a critical dialogue to identify solutions and foster change. More concretely, *interactive media* is a key communication channel and strategic partner for climate change mitigation and adaptation.

Media as such is not a new phenomenon within development cooperation, fulfilling important societal roles such as that of a credible information provider, playing a critical and investigative function, serving an educational function and an agenda-setting/building function. Traditional media communication involves radio, television and print media at the local, national, regional and global levels. However, given the recent revolution in ICTs, media practice is fundamentally changing. Convergence between different technologies and media is offering new and promising avenues to enhance the participation and inclusion of all citizens including local communities. In addition, a shift from a broadcasting model of "one-to-many" to "many-to-many" is visible, where consumers are becoming producers of content (e.g., user-generated content and citizen journalism). The result is increased participation, inclusion and influence even of marginalised groups to voice their opinion through these emerging and interactive channels.

Hence, when it comes to climate change mitigation and adaptation, this potential of the media is increasing in significance as well to reach and include more people, including the most vulnerable segments of the population. Drawing on its historical role, the media can make a constructive contribution to climate change adaptation and mitigation in at least the following ways:

Be a *credible* information provider

- Perform a public service by providing high quality and reliable information
- Translate information overload ("noise") into relevant knowledge ("music") for all segments of the population including local communities.

Serve a *critical* function

- Play an investigative role and serve as a watchdog linking political promises to action
- Assess and analyse events, policies, research results and processes, drawing links and parallels and pointing out paradoxes.

Educate the public

- Demystify climate change and improve climate literacy at all levels of society
- Internalise climate change with local people by penetrating local pockets of knowledge through local newspapers, community radios and village knowledge centres in order to identify specific coping requirements as a basis for sound policy making.

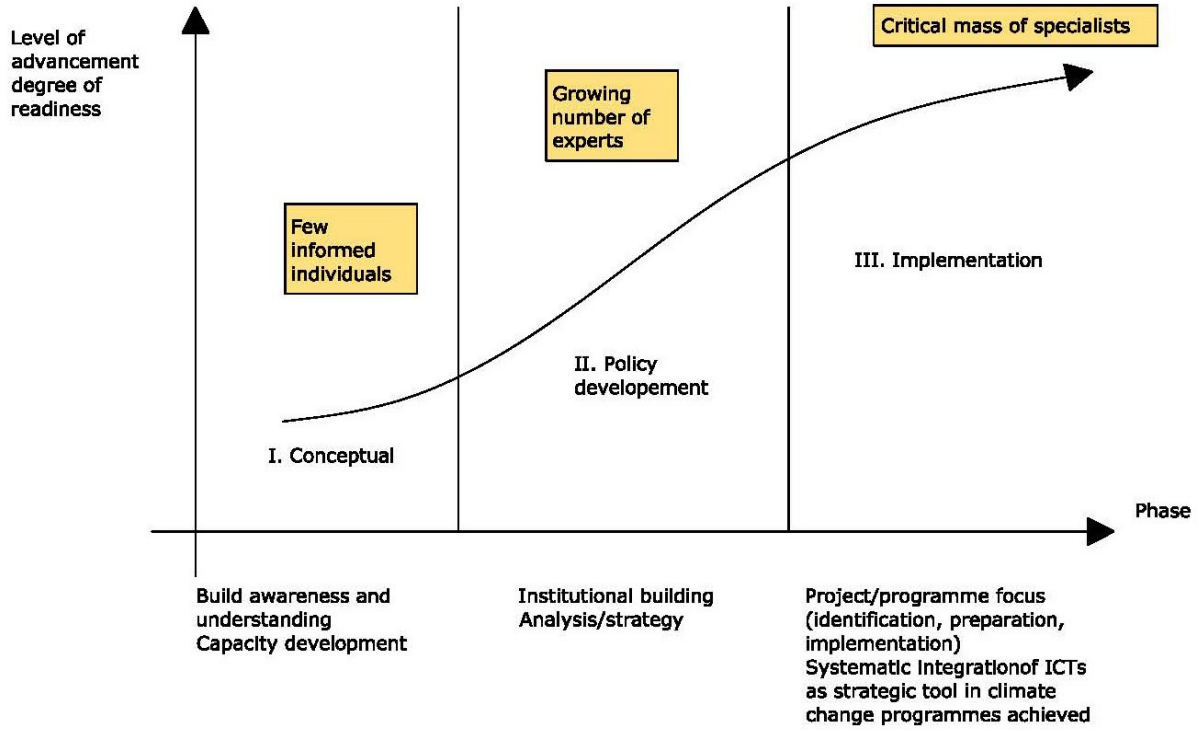
Set the climate change *agenda*

- Sensitise and influence policy makers and other decision makers to galvanise action.

2.7. Awareness raising and capacity development of all development stakeholders

Despite the direct application of the current approaches to integrate ICTs as a strategic tool into development sectors (education, health, agriculture, governance, etc.), the status quo in the current development discourse indicates that there is an insufficient awareness and understanding among development stakeholders about the added value ICTs can contribute to climate change programmes. As indicated in Figure 4, there are three principal stages to achieve the integration of ICTs as a strategic tool in climate change programmes through awareness raising and capacity development. Currently, the development community is in the first stage with some momentum gathering for the second stage. There is a need to build a critical mass of experts and policy makers to link the potential of ICTs to adaptation strategies and subsequent systematic implementation. To achieve this objective, good practices and lessons learned from ongoing ICT for development programmes should be utilised and specific approaches to climate change programmes built around them. Challenges will include the political will of decision makers to embrace ICTs (including outside-the-box thinking) and limited understanding of ICTs as a strategic tool beyond infrastructure.

Figure 4: ICTs and climate change learning curve



Regarding capacity development, it is strongly recommended to utilise a holistic and systemic approach, such as the one depicted in the "Capacity Development Butterfly" (see Annex 2), which covers the four key dimensions of "individual competencies", "organisational development", "development of networks" and "development of systems" among all development stakeholders.

2.8. Conclusion

Climate change is the defining development challenge of the 21st century: it magnifies and amplifies current poverty alleviation efforts. Climate change mitigation and adaptation strategies are increasingly becoming areas of priority on the radar of development practitioners. Timely access to and sharing of critical information will become even more important as the intensity, unpredictability and frequency of disasters is likely to increase due to climate change. Existing vulnerability patterns will be heightened and the need for respective coping strategies to reduce the risk for poor and marginalised populations who are at the forefront of the effects will increase.

The strategic use of ICTs can enhance the efficiency and effectiveness of climate change adaptation programmes and this effect has already been proven in other areas where ICTs are integrated into development programmes, such as education, health, governance and rural development. Access to information about climate change, and connecting people and communities so that they share knowledge and practical coping strategies, can reduce the risk of the inevitable effects on livelihoods of the most marginalised populations. ICTs can also empower the poor and marginalised to raise their voice for political accountability, advocacy and meaningful action.

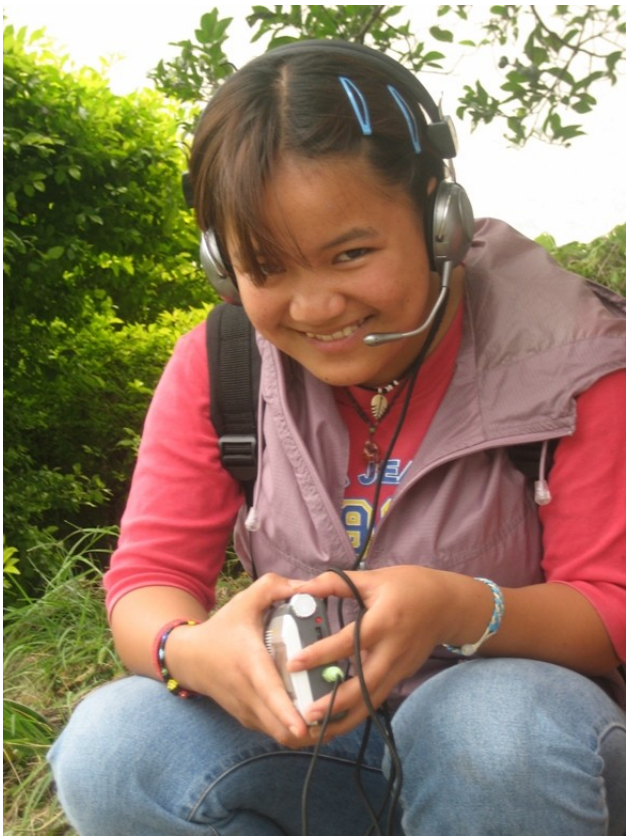
The aim of this overview was to make the case to integrate ICTs as a strategic tool in climate change programmes. To include those most affected by upcoming changes in solutions and policy processes would merit the term "participatory" development.

3. Innovative approaches and examples: Working close to the ground

3.1. Africa: Building bridges through community radio and ICTs for development

Marcelo Solervicens, Secretary General, AMARC

Knowledge flash	
Strategic ICT tool used	Interactive community radio
Innovative approach	Community radios link scientific knowledge at global level to local communities
Geographic location	Global; Latin America; focus on Africa, Burkina Faso
Key words	disaster prevention; food security; desertification; human rights-based approach; behaviour change; interactive communication systems



Community Radio Empower Women (Isis Manila). Source: AMARC

The scientific reality of climate change has finally been recognised, and the report of the Intergovernmental Panel on Climate Change (IPCC)[17] has set the background for what has become one of the key development challenges of the 21st century. The effects of climate change will roll back development successes unless mitigation and adaptation strategies are grounded in collaborative approaches at the global and local levels. In this regard, community radio can play an important role as a communication-for-development tool linking international science and strategies and local knowledge – thanks to ICTs – and facilitating specific interventions where they are most needed.

Community radio practitioners and community media have been using ICTs, mainly the internet and mobile phones, to confront the effects of climate change in local communities around the world. Among other areas, technology has helped in natural disaster prevention and management, challenges facing food security, health, water and sanitation and the challenge of desertification.

Community radio projects for climate change mitigation and adaptation are closely linked to the objective of community radio participatory programming, giving voice to local organisations and

[17] www.ipcc.ch

institutions. The objective is to give value to local knowledge and to facilitate knowledge exchange at the international level with experts and institutions.

The following offers some examples of how AMARC network projects combine ICTs and community radio broadcasting:

Disaster prevention and management

The project "Disaster management and poverty reduction through community radio", supported by the Ford Foundation, has been developed by AMARC in the Asia-Pacific region in collaboration with the COMBINE (Community-based Information Network) Resource Institution and Association of Community Broadcasters (JRKI) in Indonesia and the AMARC Japan working group.[18]

The main objectives of the project are to improve relief delivery mechanisms in the face of the humanitarian impact of tsunamis by providing training to community radio practitioners and stakeholders, and increasing awareness throughout the region regarding the role of community radio in natural disaster prevention and management. The project seeks to assess the current practices of community radios during disaster and post-disaster situations and determine how to increase the preparedness and effectiveness of community radio interventions.

Food security and poverty reduction

Changes in water quantity and quality due to climate change are expected to affect the availability of and access to food. In Latin America, AMARC's "Onda Rural"[19] initiative uses ICTs and community radio for rural development, in partnership with ALER, a Latin American association of educational radio, and the UN Food and Agriculture Organisation (FAO). The project's forum on climate change challenges is aimed at increasing the knowledge exchange between community radio practitioners and stakeholders dealing with climate change effects, and to facilitate mitigation and adaptation strategies.

In terms of information dissemination, AMARC members have used ICTs to share strategies developed by local communities to address the effects of climate change on food security. The programmes produced by community radios in Africa, Asia, the Americas and Europe are broadcast to local communities and are also made available online for further use by community radio broadcasters and stakeholders.[20]

Desertification in Africa

Examples of local community strategies to confront the effects of climate change are common. One such example is the establishment of Radio LCD, a community radio dealing with the issue of desertification, by SOS Sahel International. The community radio was launched in December 2008 in Djibo, 210 kilometres north of Ouagadogou, Burkina Faso.[21]

[18] asiapacific.amarc.org/index.php?p=25th_anniversary_training_Asia_pacific

[19] onda-rural.net

[20] asiapacific.amarc.org/index.php?p=World_Food_Day_2008&l=EN&nosafe=0

[21] www.sossahel.org

With the objective of confronting the increasing deterioration of the environment, Radio LCD, an AMARC member, aims to increase awareness of sustainable development. The radio covers a region inhabited by more than two million people, encompassing four provinces: Le Soum, Le Loroum , Le Seno and Le Bam. In a short space of time, the community radio has become a service to the community in the true sense of an accessible community radio; a necessary media tool that increases the awareness of the local effects of climate change; and a radio that supports the struggles against deteriorating natural conditions. It has also nurtured partnerships between development stakeholders. In these ways Radio LCD has contributed to behavioural changes and knowledge exchange on best practices.

Community radio and climate change mitigation and adaptation

The time has come for the global community radio movement to reflect on how to better contribute in addressing the global challenge of mitigation and adaptation to climate change. There is a need to increase the use of new ICTs to make the link between local knowledge and experiences in fighting the effects of climate change and international debates and science. There is also a need to propose a combination of global and local approaches to mitigate the effects and help the adaptation to climate change.

The challenge for AMARC and its worldwide network of members is to reinforce the social impact of community radio on climate change mitigation and adaptation. This should be done by improving the quality of content and increasing the participation of local and international actors in programming. The pivotal role of community radio in a communication-for-development process based on communication rights as a key human right needs to be emphasised. The rights of local communities and other endangered groups to know and to be heard at the local and international level regarding strategies to confront new challenges to development posed by climate change is central to any future climate change interventions.

3.2. India: "Knowledge connectivity": The Integrated Knowledge System on Climate Change Adaptation

A knowledge facilitation tool for community-centric climate resilience in South Asia

Naimur Rahman, Director, OWSA

Knowledge flash	
Strategic ICT tools used	Traditional and new media; Web 2.0; internet; mobile phones
Innovative approach	Building an "Integrated Knowledge System" through an ICT-enhanced platform to increase community resilience through increased awareness, sensitisation and mobilisation Translation of scientific knowledge on climate change resilience for local communities through communication channels
Geographic location	South Asia, focus on India
Key words	Resilience and coping strategies; digital content; top-down, peer-to-peer and bottom-up information flow; knowledge connectivity

OWSA, the South Asian centre of One World International, works to leverage the democratic potential of ICTs for promoting sustainable development and human rights in the South Asia region. In the context of climate variability risk management, One World believes that new technologies and a collective pool of knowledge can facilitate the integration of climate change response strategies into sustainable development goals, manifested within the Millennium Development Goal (MDG) framework. As a result, OWSA is working to help build community-centric efforts that address the challenges of development and climate change, and help communities adapt to a new environment. A key aspect of this effort is to collaboratively create a common ICT-assisted knowledge platform that will facilitate, sensitise and mobilise knowledge interactions through traditional and new media tools. This we hope will contribute towards low-cost, inclusive climate change adaptation interventions.

The rationale behind a knowledge system to combat climate change

Climate change consequences would substantially add to existing vulnerabilities of poor and indigenous grassroots communities in South Asia who are inadequately prepared for adapting to unforeseen changes in their economic, social and environmental context. Evidence of these vulnerabilities is already visible in the Bundelkhand region of Central India, which has faced extreme weather events over the last ten years and witnessed a decrease in food grain production by 50%. Likewise, competing demands on increasingly scarce water resources have adversely affected marginalised agricultural communities in pockets of the Indo-Gangetic belt, especially in Eastern Uttar Pradesh.

A lack of resources and knowledge further limits the capacity of individuals and communities in responding to basic crucial adaptation strategies and risk reduction measures.

Collaborative pilot projects are proposed in these areas. One of OWSA's projects, called the Integrated Knowledge System on Climate Change Adaptation (IKS-CCA), is attempting to bridge this capability gap.

The IKS-CCA approach and benefits

IKS-CCA is being designed to build a knowledge platform that facilitates access to contextual knowledge on climate adaptation from a community perspective. The point is to help poor communities adapt to climate change vulnerabilities and risks. The project aims to use innovative technology, knowledge processes and communication channels to deconstruct the spectrum of available knowledge on climate change resilience and adaptation into information packets and messages for local use by communities on the ground.

In designing this project, OWSA has been very careful of the triad of access deficits that poor communities encounter in leveraging digital opportunities: (1) inadequate penetration of broadband internet, (2) a lack of digital content in local languages, and (3) an education and human capacity deficit (including gender inequity) that creates an impediment to accessing digital knowledge.

IKS-CCA project pamphlet

The Web 2.0-compatible technology platform used in the project will enable a three-way knowledge flow: top-down social and scientific research-based knowledge; peer-to-peer experiential learning by development practitioners; and bottom-up indigenous innovations from the grassroots. These will be captured and categorised on a taxonomical map, synthesised wherever applicable, and packaged for delivery in multiple formats using several tools, such as voice and short messaging service (SMS), RSS/SNS feeds, email and community radio, amongst various Web 2.0 applications. The aim is to develop what we call "knowledge connectivity" between grassroots communities, development practitioners, academia and policy makers. This would enable knowledge exchange by overcoming barriers of technology accessibility, language and other social inhibitors.

The project also aims to build innovative community partnerships to encourage a positive impact at the grassroots with respect to climate change risk management and adaptation. Change makers will include community-based organisations, non-governmental organisations (NGOs), the private sector and governments, who will not only facilitate the process but also benefit from it in terms of increasing their own impact on the ground.

The project will initially benefit around 50,000 households in the target areas by providing crucial knowledge and expertise on climate change best practices, including climate variability risk management measures. After the initial pilot, and on a time scale of five years, the project is envisioned to benefit at least 500,000 households in the project target areas by providing knowledge.

The robust knowledge-facilitation model envisaged can be scaled up organically to surrounding regions, and replicated (with appropriate societal and linguistic adaptation) in similar bioclimatic regions of South Asia and Africa, while its learning will be relevant to other bioclimatic regions of the global South.

3.3. Peru: ICTs and food security: The case of Huaral Valley[22]

Karel Novotný, Knowledge Sharing Projects Coordinator, APC, with input from Bruno Güemes Delgado, CEPES

Knowledge flash	
Strategic ICT tools used	Telecentres (public access points); information kiosks
Innovative approach	• Agrarian information system enhanced through telecentres to provide access to information to obtain fair distribution of irrigation water • Alternative energy systems
Geographic location	Global; focus on Latin America, Peru
Key words	Agrarian information system; fair distribution of irrigation water; food security; alternative power

The Association for Progressive Communications (APC) is a global network of 51 civil society organisations, most based in the global South. Despite differences in their particular work focus, all members are engaged in community development and primarily focus on using ICTs to do their work. They have chosen ICTs because they all believe in "the creative potential of ICTs to improve people's lives and create more democratic and egalitarian societies".[23]

The spectrum of development areas they work in includes new initiatives that are emerging in response to global changes in climate and the environment. These initiatives deal with areas such as research and implementation of renewable energy resources; ICT-enabled capacity building and knowledge sharing among local farmers; development of training materials on building photo-voltaic solar energy systems; research on low-power consumption hardware; strengthening regional sustainable economic development in Central America; the use of community radios for climate action; helping meteorological offices decentralise the analysis of climate information; and SMS-based data collection on environmental accidents and disasters, amongst others. (Specific examples of initiatives in these different areas can be found in the section on APC member climate change-related initiatives below.)

A number of APC members have been developing ICT projects in rural areas for years, and their work is inevitably impacting farming and trading practices in the communities they work with. In some cases, this comes as a secondary effect of community development projects with a different focus, such as ICT-based educational projects, developing local telephony systems or providing access to key information published online. In other cases, improving local agricultural production and its subsequent revenues, promoting environmental and production sustainability, and the better management of natural resources are the main objectives of these projects. Such is the case of the long-term project developed by Centro Peruano de Estudios Sociales (CEPES) in the Huaral Valley, 90 kilometres north of Lima.

[22]Huaral Valley Agrarian Information System: huaral.org

A detailed case study on the Huaral Valley project is available at: www.ci-journal.net/index.php/ciej/article/view/394/335 (Spanish)

[23]APC's vision can be found at: www.apc.org/en/about

Overview of the project

The Huaral Valley cuts through a semi-arid and desert region and only receives about eight millimetres of rainfall annually. Water for irrigation is so scarce in this region that it must be obtained from the lakes in the neighbouring highlands. Climate change is the probable cause for the melting snowcaps and diminishing rainy seasons, contributing to a decrease in water supply in the valley.

Since 2003, CEPES has established a network of small, local telecentres in the valley with assistance from leaders of local agricultural organisations. An agrarian information system was built, to which all local organisations are connected, as well as a system that facilitates the fair distribution of irrigation water. Most importantly, CEPES has achieved this by working in close collaboration with local farmers and their representatives, making it possible for these organisations to essentially take ownership of the project which they now run with ongoing technical assistance from CEPES.

Telecentres

The administrators of local telecentres have become information hubs for farmers who have not yet mastered the use of computers themselves. In these "information kiosks" the farmers can search for relevant information through the agrarian information system or elsewhere online. The agrarian information system provides local data and information on market prices and farming (such as information on crops and cultivated areas), amongst other environmental content, and is updated daily. The objective is not only to achieve changes in patterns in water consumption by the farmers, but also to build resilience to climate change in order to prevent further environmental degradation in the region. Besides promoting access to information, the telecentres also serve as capacity-building hubs, which host workshops and online radio programmes.

In addition to the numerous secondary benefits of bringing publicly available connectivity to the valley, the project has had a direct impact on the way agricultural production is being managed on different levels. For example, the distribution of water is now being monitored and recorded in the information system and administered by the local board of irrigation users. The system makes water usage more transparent and fair, and also makes it easier to monitor contributions towards the maintenance and administration of the irrigation systems.

Changes in the Huaral Valley

With access to new ICT tools and information that were previously unavailable, or only available at high costs in terms of resources and time-consuming travel, the Huaral Valley has experienced some notable changes. The project has brought new opportunities, and some of the more receptive farmers have started making use of these tools. The shift is slow and gradual, but notable despite the fact that farmers who are directly accessing online resources form only a small minority (the majority of farmers are over 50 years of age, which makes the appropriation of new technologies more difficult).

Since its inception six years ago, local cooperative leaders have grown in status, and many farmers recognise the benefits of access to information for the whole community. As a result, new knowledge is being shared far beyond the circle of those who are primarily connected to the project. Not only are farmers reaping the benefits of the project, they now own the project, and local leaders travel to other farming communities to tell how ICTs can benefit them.

Spin-off effects

These changes in the community have given rise to new initiatives that were not originally intended. For example, a community radio station – Siembra Huaral – has been set up, and among other farming-related topics, it recently started broadcasting a new programme on the environment and climate change and the challenges that they present for Huaral. In mid-2009, the programme promoter, Bruno Güemes, will start publishing a blog dedicated to environmental issues that are relevant to the Huaral Valley.

Alternative power

The absence of a power grid in one of the telecentre's localities generated a need for research about the use of alternative power resources. A small two-kilowatt hydro-generator has been built alongside an irrigation ditch. This makes it operational only when there is water in the canal, which in turn depends on the irrigation schedules. The need to secure electricity from local natural resources might set an important precedent for future planning, and it can be also environment- and climate-friendly (though not always).

The impact on food security

It is still too soon to evaluate how ICTs have contributed to increasing food security for people living in the Huaral Valley. The effects that can be observed are complex and interrelated, and it will take some time before these effects can be reflected in charts that demonstrate an increase in agricultural productivity.

However, the fact that farmers – many with no formal education beyond the primary school level and virtually no exposure to ICTs – are learning to use the new technology and are finding answers to problems that they otherwise could not solve, is already an important indicator of positive changes in the livelihoods of Huaral Valley inhabitants.

APC member climate change-related initiatives

Research and implementation of renewable energy resources

Fantsuam Foundation works in BayanLoco, a peri-urban slum of Kafanchan, Kaduna State, Nigeria. It is looking into the development of a self-sustainable local telecentre using alternative power sources (solar energy) and a sophisticated power back-up system (see: www.fantsuam.org/background.html and fantsuam.it46.se/S/solar_system).

Rede de Informações para o Terceiro Setor (RITS) is working with two communities on the banks of the Tapajós River in the Amazon region of Brazil. It is looking into the development of local telecentres and Wi-Fi-connected boat hospital services in isolated areas using solar power (see: www.rits.org.br/projetos/index.cfm). As this case story shows, CEPES is also exploring renewable energy solutions in the Huaral Valley.

ICT-enabled capacity building and knowledge sharing among local farmers

The Arid Lands Information Network in Kenya has two programmes which have been leveraging the use of ICTs to help communities adapt to climate change. They have created a platform providing support materials and information on climate change adaptations for local Kenyan communities. Complementing this is a farmer-led grassroots programme on best practices and local management of adaptation knowledge, and plans for development of an SMS-based data collection system focusing on environmental issues (see: www.alin.or.ke).

Development of training materials on building photo-voltaic solar energy systems

Training materials were developed as part of the TRICALCAR project (a series of Latin American and Caribbean regional workshops on building community wireless networks). These are available in English and Spanish and published on ItrainOnline.org: www.apc.org/en/projects/lac/wireless-lac-tricalcar.

Training materials in English: www.itrainonline.org/itrainonline/mmtk/wireless.shtml#Energy_for_telecommunications_systems

Training materials in Spanish: www.itrainonline.org/itrainonline/mmtk/wireless_es.shtml#Unidad_15:_Energ%EDa_para_sistemas_de

Research on low-power consumption hardware

This is one of the current focus areas of United Kingdom-based APC member Computer Aid International (see: www.computeraid.org).

Strengthening regional sustainable economic development in Central America

Sula Batsú (in collaboration with Hivos) is working in Guatemala, Honduras, El Salvador, Nicaragua and Costa Rica. Its project consists of empowering organisations working in sustainable production and renewable energy; positioning the voices of the most vulnerable populations so that their experiences and visions are heard; developing markets for sustainable production; and positioning local initiatives for renewable energy (see: www.red-des.com).

Use of community radios for climate action

This is one of the strategies currently being adopted by Cameroon-based APC member organisation PROTEGE QV (see:www.protegeqv.org).

Helping meteorological offices decentralise the analysis of climate information

Computer Aid is working in this area in Kenya, Zimbabwe and Uganda, in partnership with national meteorological offices in Africa as well as with the UK Meteorological Office and Reading University. Through providing hardware and software to rural weather stations, the project enables meteorological stations to conduct in-house analysis and issue forecasts and advice to local farmers and fisherpeople. This helps with community preparedness against droughts, storms and other adverse climatic events (see: www.computeraid.org).

SMS-based data collection on environmental accidents and disasters

The Bulgarian NGO BlueLink is setting up an SMS-based information system that will enable users to report environmental accidents and disasters (see: www.bluelink.net). The system will be based on the Ushahidi.org project, which was developed for monitoring and reporting on violence hotspots during the Kenyan elections (see: ushahidi.org).

3.4. Madagascar: Survival strategies: Participatory video project

Kitty Warnock, Senior Adviser, Communication for Development, Panos London

Learning to use the video camera. Photo: Rod Harbinson, Panos

Knowledge flash	
Strategic ICT tools used	Traditional and alternative media; radio; videos; digital storytelling; internet
Innovative approach	Using communication tools and methods to empower local communities to increase self-sufficiency and coping strategies and to voice their concerns and priorities for the future
Geographic location	Africa, focus on Madagascar
Key words	illuminating marginalised voices; media, enhanced debate; journalists; participatory video methodology; advocacy

Panos London and communication about climate change

Panos London has been producing information materials on climate change since the early 1990s, to help journalists in developing countries understand and report better on the science, the impacts and the complex international negotiations. Media are the main source of information for most people in the world, and quality journalism and public debate are essential for creating the context in which tough policy decisions can be made and people can make their own choices for adapting to

climate change. Panos London continues to support stronger professional journalism: in 2007 it formed a coalition with Internews and the International Institute for Environment and Development (IIED) to create the Climate Change Media Partnership to support Southern print, radio and television journalists to attend and report directly from United Nations Framework Convention on Climate Change summits.

Panos London also works to strengthen people's own capacities to discuss issues, share their knowledge and ideas, and contribute to important public debates, using different communication tools and methods such as tape recording, radio, photography, the internet and digital storytelling. For example, Panos has worked with members of vulnerable communities to record and discuss their experiences of facing the effects of climate change such as desertification and hurricanes. A photo exhibition based on the former project was recently shown at the UN during a meeting of the Commission for Sustainable Development.

Survival strategies in southern Madagascar: Making the films

Participatory video is another way poor and marginalised people can take control over what is said and shared in their name. Videos are effective tools for stimulating debate within their own communities, and also enable them to speak powerfully to decision makers and other audiences thousands of miles away.

> "I'm really eager: it's something that my ancestors have never touched, so now at this point in time we, their grandchildren, are learning; and so it's going to be a teaching for the small ones and for our children and our children's children." – Participant in video project

In southern Madagascar environmental change is pushing the poor even closer to the margins of survival. In a project called "Survival Strategies", Panos London is working to provide the communities of southern Madagascar with a platform to share their experiences, knowledge and coping strategies and to voice their concerns and priorities for the future. One of the project's main aims is that responses to climate change and future development plans, such as the Madagascar Action Plan, will be informed by indigenous people's experience and priorities.

Panos' partners in the project are the Andrew Lees Trust (ALT), an NGO working in Madagascar to empower local communities to increase their self-sufficiency; Living Lens, a United Kingdom-based NGO that uses video to generate new channels of communication between individuals, groups and communities; and the International Fund for Agricultural Development (IFAD), a UN agency which works towards eradicating rural poverty.

Learning to use the video camera. Photo: Rod Harbinson, Panos

Over ten days in March 2008, eight men and women from five Antandroy communities in the coastal region of Faux Cap were trained and supported to plan, shoot and contribute to the editing of six films. Participants worked in four groups and produced a total of six ten- to fifteen-minute films.

The most serious environmental challenges, the group decided, were variable rainfall that makes cultivation difficult and forces people to adopt new crops or diversify their livelihoods, and more frequent drought and harsh winds – both, they think, exacerbated by deforestation – that are causing the spread of sand dunes and loss of crops and cattle. The films they made show how the communities are using their skills and resources to adapt to these challenges.

"The community produced six extraordinary films. They live with no electricity, TV or cameras and yet they took to it with ease and grace, and the films they produced were beyond all our expectations." – Living Lens, video trainers

The four films that were finally selected for distribution are:

Fishing for our survival: Fishing is one of the new livelihood options for farmers. A fisherman describes the importance of his tools and the challenges he faces, and a fish seller explains her journey in getting the fish to market to secure vital income.

Sorghum: a crop of our ancestors: Sorghum – a crop of Androy heritage that can survive the harsh drought – is being reintroduced. In this film an older woman passes on to a young woman her knowledge of preparing and using it.

Our fight against the dunes: Community members plant sisal and vines in an attempt to stabilise the creeping dunes which are burying their homes and schools.

Chickens are my security: In the absence of any formal banking account or other forms of financial security, chickens are this woman's life's investment, and are also the closest thing she can get to health insurance or a college fund.

Showing the films locally and around the world

The edited films were immediately shared with the wider community at a screening event attended by over 500 people. Some or all of the films have been shown since to decision makers and the public in the district and nationally. These screenings have stimulated new ideas and debate and a lively demand for the films to be made available more widely across the country.

In August 2008 at southern Madagascar's cultural highlight, a music festival, audiences of 3,000 people watched the films over two days, including local dignitaries such as several mayors, local journalists and international development agencies. In December 2008 they were shown to an invited audience of local development decision makers in south Madagascar's regional capital, in the presence of the filmmakers themselves. A lively 90-minute facilitated discussion followed the screening, as a result of which at least one NGO invited the communities to submit project proposals. Others made suggestions for additional livelihood strategies – for example, smoking fish as well as selling it fresh – while the films also resulted in people demanding more action from the Ministry of the Environment. Copies of the films were distributed for further showings and there was enthusiasm for getting them broadcast on national TV.

> "The films represent an excellent medium for catalysing debate on the development needs of the local population." – Andrew Lees Trust

The same evening, 800 inhabitants of the town attended a well-publicised screening. TV news bulletins featured the decision makers' meeting, with some stills from the videos and discussion of the ALT projects. Now ALT is working on a French-language version and trying to get the films broadcast on national TV.

The films are also reaching international audiences. A six-minute compilation of the Dunes and Sorghum films was screened twice during the Poznan climate change summit in December 2008, to audiences of policy makers and practitioners. It generated substantial interest and discussion – of the participatory video methodology as well as the content.

Extracts from the same two films were also screened during the Indigenous Peoples Global Summit on Climate Change, a meeting held in April 2009 in Alaska and organised by the United Nations University Institute of Advanced Studies Traditional Knowledge Initiative (UNU-IAS TKI) together with Inuit organisations. The purpose of the summit was to help indigenous people to prepare their contributions to the Copenhagen summit in December 2009. The two films will be included in a compilation DVD of "indigenous viewpoints on climate change" to be disseminated by the UNU-IAS TKI to indigenous communities around the world to inspire them to hold their own adaptation discussions; and it will be among the films to be shown at the National Museum and other venues during the Copenhagen summit. The films have also been submitted to a micro-documentary film contest run by the World Bank's Social Dimensions of Climate Change programme, posted on YouTube, and disseminated on websites.

For more information see:

www.panos.org.uk/survivalstrategies to view the films

www.livinglens.co.uk

www.andrewleestrust.org

www.unutki.org for more about the Indigenous Peoples Global Summit on Climate Change

www.panos.org.uk/?lid=25525 to view experiences of climate change journalists

www.climatemediapartnership.org for more about the Climate Change Media Partnership, which is supporting 40 journalists to report from the Copenhagen summit in December 2009

www.panos.org.uk/?lid=22221 for Panos' most recent media brief on climate change, Climate Change: adapting to the greenhouse

www.panos.org.uk/?lid=20026 for Desert Voices, a collection of oral testimonies from people living with desertification in Ethiopia and Sudan

3.5. South Asia: Online Media Campaign on Climate Change: Notes towards an intervention

Kishor Pradhan, Country Representative for Nepal and Deputy Director, Panos South Asia

Knowledge flash	
Strategic ICT tools used	Traditional and alternative media; internet
Innovative approach	Developing the capacity of South Asian media practitioners on the application of ICTs for an online media campaign to advocate prevention, mitigation and adaptation strategies Enhancing the partnerships between civil society organisations and media practitioners
Geographic location	South Asia, focus on Nepal
Key words	Capacity development; media

In 2008 Panos South Asia proposed an information project that intended to use ICTs to share, aggregate, provide, communicate and manage knowledge on climate change adaptation. The project was the culmination of several years of covering climate change issues by Panos South Asia. Key milestones in our coverage are listed below:

- November 1999: Tough Terrain (a media report on sustainable mountain development issues); two reports on climate change in the Himalayas were included, *Feeling the Heat* (on global warming) and *Into Thin Air* (on glacier melting).
- May 2004: *Environment for All*. Some of the reports included in this project touched upon the issues of climate change and its impact (such as coastal erosion).
- October 2004: *Disputes Over the Ganga*. Some of the reports in this project sought to look at Ganges water basin management issues in Bangladesh, India and Nepal from climate change perspectives (e.g., the issue of floods).
- June 2006: *On the Brink*, dealing with energy in South Asia. The reports in this project looked at the issue of finding new sources of energy and climate change in South Asian countries.

Online Media Campaign on Climate Change

The goal of the project, which is called the "Online Media Campaign on Climate Change", is to facilitate access to information and knowledge on climate change in order to enhance the role of the media in advocating for prevention, mitigation and adaptation strategies and approaches.

The project also seeks to build the capacity of media practitioners and other stakeholders in South Asia to practice online media campaigning on climate change.

In order to do this, the project plans to create a knowledge and communication platform to stimulate discussions between the various climate change actors (NGOs, donors, governments, multilateral organisations, etc.) and the media. It also aims to organise training interventions to build the capacity of South Asian media practitioners on the application of ICTs for online campaigning on climate change.

As we see it, the key issues are:

- The proper identification of climate change issues relevant to each country in the region
- Defining the media's role in combating climate change
- Defining how online media can be used for campaigning
- Building an effective partnership between the media and civil society, as well as government organisations and other stakeholders
- Identifying and supporting leaders and champions in the media and elsewhere.

We are still in the process of trying to raise funds for this project. However, the imperatives behind the project remain. Though climate change has been a burning issue and a significant amount of effort has been put into raising awareness at various levels, there is still a daunting need to raise the general public's awareness on climate change, to engage the media and stimulate dialogue.

3.6. Ecuador: First steps: Information and knowledge advocacy for climate change amongst small-scale farmers

Denise Senmartin, Knowledge Sharing Officer, IICD, and Wietse Bruinsma, Country Manager Ecuador, IICD

Knowledge flash	
Strategic ICT tools used	Personal computers for database management; internet portal
Innovative approach	Capacity development on using ICTs amongst small farmers to document experiences, share information, and build awareness for sounder natural resource management while providing a platform for lobbying at local and national level
Geographic location	Latin America, focus on Ecuador
Key words	Latin America, focus on Ecuador

Climate change adaptation requires sound knowledge of resource management at the local level. ICTs are instrumental in helping to document how communities and businesses manage resources, as well as recording changes in their environment. Collecting, systematising and disseminating this information provides the basis for the work of facing the challenges posed by the change of climate patterns.

IICD supports projects that integrate the use of ICTs for sustainable livelihoods, including sustainable production practices, agro-ecological initiatives and sustainable energy approaches among small-scale farmers in nine different countries. When faced with climate change adaptation, small-scale farmers become particularly vulnerable, as their main means of subsistence is threatened. At the same time there is a lack of attention given to their condition, and few resources set aside to help them. Through focus group discussions with farmers and the projects themselves, we have learned about key challenges they currently face: the depletion of natural resources, different agricultural practices, and the consequences of climate change are bringing concrete changes to the way they live, support themselves and farm. While they are searching for ways to address these challenges, a first step is to document and learn from what is happening.

"The training helped me learn how to make presentations and allowed me to help design materials as means for communicating the environment projects." – Farmer, a participant in a workshop on maize production

Documenting the management of natural resources

Acción Ecológica, an NGO based in Ecuador, is working on documenting and raising awareness on how natural resources are managed in several regions in the country. Active since 1987 and with twenty permanent staff and several volunteers, Acción Ecológica serves as a watchdog on a variety of environmental issues, from biodiversity and conservation, to the consequences of various extractive technologies and free trade. They draw on a wide range of sources from the private, public, civil society, academic and scientific sectors in order to keep the public well informed.

Acción Ecológica uses ICTs to strengthen the dissemination of information and increase awareness about the importance of the enormous environmental challenges in Ecuador. As one of the NGO's

members put it in a video interview: "We can reach people much more quickly and effectively [using ICTs]. In this way, people can become aware of the… exploitation of natural resources in the country".[24]

The project's activities include training courses on how to mobilise and empower small farmers so that they can counteract the powerful agribusiness lobby in Ecuador, seminars, discussion forums, and an e-learning platform. In addition, a database has been set up to share material developed by Acción Ecológica.[25] The NGO's portal is popular, with about 45,000 page requests per month. They publish electronic newsletters, maintain six different discussion lists, produce presentations for public events, and publish interactive maps on maize and sugar cane production and agricultural commerce in Ecuador. With support from IICD, Acción Ecológica is also using ICTs to develop a food security strategy for small and medium-scale farmers to help them decide on the sustainable use of natural resources.

A spotlight on maize production

The first phase of Acción Ecológica's intervention focused on investigating maize production, notably in Loja and Los Ríos provinces, to identify, diagnose and propose alternative approaches to the new environment. Involvement of the community is a key aspect of the project. Local producers participated in workshops to discuss and document both historical and current practices in maize production.

> "The community has started to respect nature and take care of it, implementing other ways for subsistence other than logging, and has started to coordinate activities like campaigns and workshops." – Farmer, a participant in a workshop on maize production

The information from the first phase was also used as a basis to produce a draft version of an interactive map to visualise maize production, the main companies involved in maize commercialisation, and land use conflicts in Ecuador.

ICTs are also giving small-scale farmers a chance to make their voices heard and appeal for action. Some of the suggestions coming out of the workshops include educative, economic, cultural and political actions. These included statements such as: "Disseminate more information at schools and hospitals"; "Recuperate multi-crop farming, not just mono-farming"; "Expand sustainable farming not based on chemicals"; "Guard traditional seeds and knowledge"; and "Demand realistic policies for small-holding farmers".

Based on this experience, Acción Ecológica has started similar activities related to the production of sugar cane and of transgenics and biofuels, which pose a challenge, but also an opportunity to involve diverse stakeholders.

It is expected that by the completion of this project phase, there will be a database with crucial information on the production of maize, sugar cane and biofuels, a video about agribusiness – highlighting the threat it poses to small farmers – and concrete cases of political lobbying for addressing environmental challenges at the local level. Acción Ecológica is also organising a

[24] The interview is available at video link: www.iicd.org/video/ict-to-serve-ecological-action/?searchterm=accion%20ecologica (the quote used here can be found at the four-minute mark.)

[25] www.accionecologica.org

number of "Clínicas Ambientales" (Environmental Clinics) in the Amazonia region of Ecuador, in which farmers are equipped with cameras to document their activities. IICD will facilitate exchanges with AGRECOL, an organisation it supports in Bolivia that uses a similar approach in assisting small-scale farmers.[26]

Although much more work needs to be done to help the farming communities in Ecuador prepare for changes in climate patterns, the first steps of documenting local realities and making them known is taking place, with ICT playing a key role in the process. It is expected that access to this information and the expansion of the awareness campaigns will mainstream climate change adaptation needs in public, private and political discourse, as well as in development projects targeting the most vulnerable groups.

Acción Ecológica web portal

[26] www.iicd.org/projects/bolivia-agrecol/?searchterm=agrecol

4. Report back: BCO Learning Day on ICTs and Climate Change

Alan Finlay, Open Research

BCO Learning Days build on the core work areas of BCO members and draw on the expertise and experience of the group in order to harness synergies and capitalise on collaboration. An ICTs and Climate Change Learning Day was held in Johannesburg on 19 December 2008, and looked to highlight the role of ICTs in meeting the global challenge of a warming planet. This report back captures some of the key points raised during the discussions.[27]

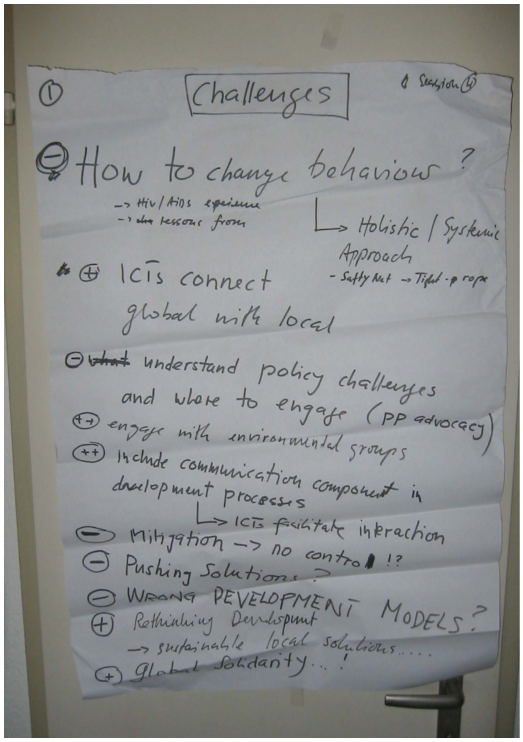
A holistic approach to communications is necessary

Communication is not just about sharing information, but about a process that is interactive and participative: it is an exchange that means listening and talking. Participants emphasised that a holistic view of communications was necessary when working at the local level. Channels of communication are not restricted to ICTs, but include face-to-face communication, meetings, traditional mass media and telephones. As one participant put it: "Theatre, video, song, photographs, dance, body language, even the postal service are all principle parts of the communications environment."

Key considerations for any communications initiative dealing with climate change were:

- The need to create buy-in amongst the beneficiaries of the communications drive. Without buy-in, interventions would not be effective. Communities need to be mobilised and encouraged to accept that climate change is a reality, and that it is likely to change how things have been done in the past.
- All kinds of communications platforms need to be leveraged in order to engender understanding and behaviour change, and to provoke appropriate action.
- Communities need to know that they can trust the communications processes set up. Relevant actions that are necessary in response to climate change need to be identified in communities. For instance, there may be the need to move houses because of rising flood levels. Once these have been identified, communities need to be informed of options, and have the opportunity to share and discuss their fears.
- Communications practitioners need to think about all the development needs of a community when planning an intervention. This includes access to basic infrastructure such as water, roads, electricity and sanitation.
- Essential communications questions need to be asked, such as, "Is the infrastructure in place to warn people of an approaching hurricane or tsunami? If not, what needs to be done?"
- Finally, communities need to be empowered to hold government accountable.

[27] The full report for the Learning Day can be downloaded at www.bcoalliance.org



Brainstorm #1: ICTs and climate change – key challenges.

Working towards inclusion

One of the key challenges facing communications practitioners is that while the poorest and most vulnerable are likely to be affected the most by climate change, they are generally excluded from decision-making processes, and are often not well informed on policy developments and other macro-level considerations. In this regard, communications and climate change represent a social justice issue.

Conversely, people working on the ground (such as farmers) are the closest to some of the effects of climate change (such as changing weather patterns) and are therefore valuable sources of information about the changes taking place, and even on the most appropriate remedial actions to take.

Moreover, communities are often isolated from scientific projects and therefore alienated from the results and conclusions of these projects. How to properly involve communities in scientific research is a key issue. By including the community in research, a conversation could be started and understanding achieved. Technology could be used to encourage communities to monitor and map climate change (e.g., using blogs or portable weather monitoring technologies).

Advocacy and action

Participants emphasised that developing countries are actors in the climate change space (e.g., deforestation and overgrazing by local communities are directly contributing to climate change). As a result they need to be proactively involved in finding solutions.

However, it was pointed out that in developing contexts the objective is changing the behaviour of people who are often on the edge of survival. If your livelihood is precarious, then changing what you do is risky, and this poses a challenge to advocacy initiatives.

It was felt that communication work should target people as individuals, and that communications campaigns or initiatives need to personalise climate change in order to make it meaningful and relevant. The importance of creating a sense of ownership and transparency in communications initiatives was stressed.

Participants felt that key focus areas for ICT practitioners in the context of climate change should be:

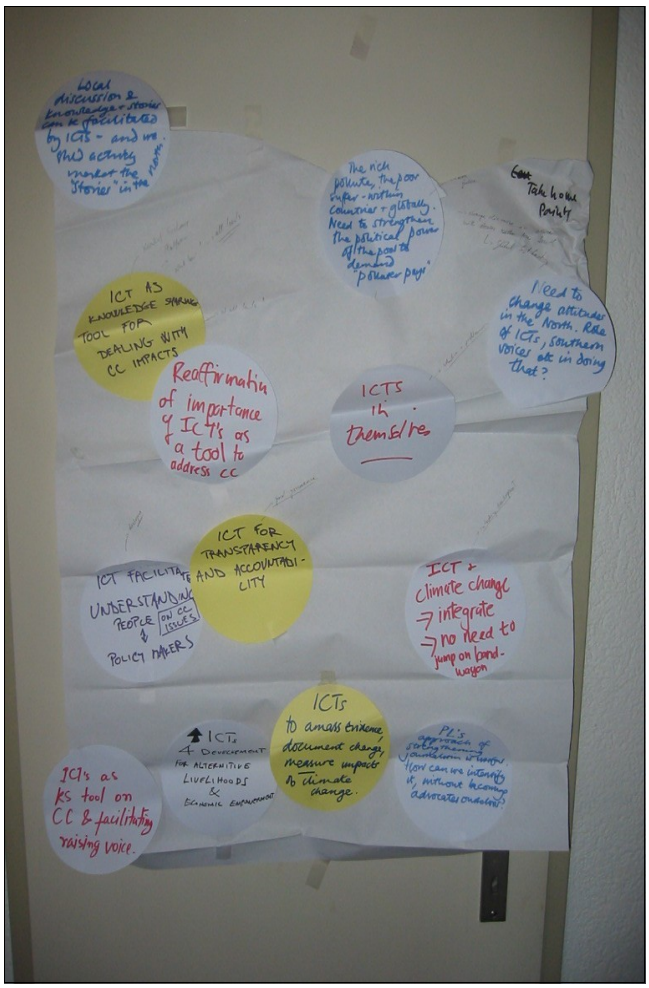
1. Sharing knowledge and raising voices.
2. Using ICTs in policy advocacy and for encouraging behavioural change.
3. Using ICTs to facilitate an understanding between people and policy makers.
4. Recognising that one cannot use ICTs without acknowledging how their production, use, and disposal impacts on the environment. Positive steps need to be taken to remedy this.
5. Mainstreaming ICT use into existing initiatives.
6. Raising dialogue without closing down discussion. There is a need to keep voices of dissent alive.

It was argued that the climate change challenge needs to be framed positively. While "mitigation" and "adaptation" are important categories, a third category dealing with "opportunities" would be helpful and inspiring. For instance, climate change is an opportunity to put participation, as well as women's issues, back on the global agenda. It is also an opportunity for individuals and communities to examine their lifestyles and make changes for the better.

Climate change offers people a common point of reference and purpose. It requires collective action towards a mutually beneficial goal, and is a cause for global solidarity. At the same time, climate change challenges the development paradigm that asserts that development is the primary path to growth. This means that there may be a need to refocus advocacy issues and campaigns.

Sustainable technology

There is a need to consider the sustainability of ICT interventions – which now includes environmental sustainability. The use of solar power needs to be encouraged, high quality refurbished PCs should be used where appropriate, and a strategy for the end-of-life environmentally sound disposal of technology should be built into project plans from the start.



Brainstorm #2: ICTs and climate change – clustering the concerns.

Telling the climate change story

While the relevance and quality of programming are important, one of the challenges facing developing countries is that the level of journalism is not always good. There is a need for capacity development so that stakeholders – such as journalists and ICT and communications practitioners – can report on climate change more knowledgably.

Because communications initiatives are a process, journalism should aim to catalyse discussions in communities. As one participant put it: "The media should not crystallise on a conclusion too quickly."

The role of trusted "infomediaries" was emphasised when working with communities, as well as "folksonomies" – or meaningful information categories developed by communities – rather than top-down taxonomies. The potential role of storytelling in sharing adaptation strategies and challenges was also emphasised.

Challenges and opportunities

Key challenges and opportunities identified by the Learning Day are summarised in Table 2.

Table 2: Key challenges and opportunities

Challenges	Opportunities
• Behaviour change is difficult, as comparable communications challenges such as HIV/AIDS show. • The issues are complex. There is a need for awareness raising and the translation of difficult issues into understandable terms. • The role of public policy and regulatory frameworks is unclear. • Access to ICTs is very uneven • There is a lack of governance accountability and delivery.	• ICTs can be used to create "interaction" (communication processes). They are an opportunity for collaboration and communication, and simply to create a conversation. • ICTs should offer value to organisations. They can offer new solutions. • Climate change is an opportunity to rethink development, and an opportunity to offer solutions that stimulate the local economy. • There is an opportunity to use the global economic crisis to think about development in terms of climate change. • There is an opportunity to subsidise solutions through taxation.

5. Conclusions and recommendations

The conceptual overview, practical approaches and lessons learned from the ICT and Climate Change Learning Day, all discussed in this publication, suggest the following learning experiences that can serve as recommendations for interventions generally:

5.1. General conclusions

Climate change: The communications challenge of separate spheres of experience

The effects of climate change are felt in different ways by different people, groups and communities across the globe. Similarly, the knowledge of how to deal with climate change exists in pockets at the community level – where, for instance, farmers gather to discuss how to deal with deteriorating rainfall conditions – or is isolated in expensive laboratories, testing stations and conference halls in the fields of scientific research and humanitarian causes. ICTs have a fundamental role to play in narrowing this experience gap so that meeting the challenge of adapting to climate change becomes a collective and informed response, and so that information and knowledge are shared widely and fluidly between different stakeholders.

Systematic integration of ICTs as strategic tools in response to climate change

There is no need to "reinvent the wheel", since good practices and lessons learned from existing development programmes on the strategic use of ICTs can be built upon. There is a need to apply and build on good practices found in current ICT and development approaches (i.e., access, voice and networking) within specific development sectors (education, health, governance, sustainable livelihoods, etc.) when responding to climate change. Wherever possible, climate change adaptation strategies need to be integrated into current development programmes as a cross-cutting concern. As the practical examples suggest, there is a need to focus on the "C" in ICTs rather than the "T" (i.e., "communication", "capacity development" and "content" rather than "technology" or hardware).

The need for awareness raising and capacity development among all development stakeholders

Awareness raising and capacity development around the potential of using ICTs to adapt to climate change need to happen at all levels. All relevant stakeholders should be included in these interventions, including donor agencies, implementing partners, governments and beneficiary communities. To achieve systemic change, a holistic capacity development approach needs to be applied, such as the one depicted by the Capacity Development Butterfly model in Annex 2.

5.2. Specific conclusions from innovative examples for practical application

The need for documentation and storytelling at the local level

Acción Ecológica shows how there remains a strong need to document, narrate, capture and record adaptation challenges, techniques and knowledge at the local level. Grassroots know-how needs to be shared and understood. This process of documentation is also an opportunity for local communities to voice their concerns – political, social, personal – at a regional and global level, and can offer an opportunity for these communities to influence policy.

A holistic approach: Appropriate information and knowledge exchange

One World South Asia highlights the importance of appropriate knowledge (or "contextual knowledge") exchange: that is, information and knowledge that are needed and relevant to local communities, packaged in a way that is meaningful to them, including in an appropriate language, and in a way that takes into account social inhibitors to knowledge (such as the gender divide) and technological gaps. ICTs offer innovative ways of organising information and knowledge and repackaging it organically to meet the requirements of contextual knowledge on climate change. At the same time, all actors participating in BCO emphasise that a holistic approach to information and knowledge sharing needs to be taken, and it needs to be recognised when the most appropriate way of sharing information is off-line, through face-to-face engagement, storytelling or demonstrations, amongst others. Any ICT-based information intervention at the community level needs to map the organic information and knowledge flows in that community before deciding on the most appropriate information strategy.

Raising voices: Community radio at the epicentre of a people-centric climate change response

AMARC shows how community radio can link different spheres of experience, giving voice and value to the experiences and knowledge of local communities. Through proper training and preparedness, community radio has a vital role to play in natural disaster relief and management. In particular, technologies such as mobile phones and the internet can be usefully combined with the reach of community radio to share information and resources and in emergency situations. Any communications initiative dealing with climate change should consider the potential of incorporating community radio into its project goals.

The power of the visual

While community radio offers a "voice" to many, Panos London shows through its participatory video projects how the visual can be a powerful stimulus to action and change – and can be used as an effective lobbying tool. Video offers an exciting way of empowering local communities, some of whom may be illiterate, and breaking down the barriers created through complicated ICTs.

Using the internet as an effective knowledge intervention

Acción Ecológica also shows how the internet can be leveraged as an information resource, learning platform and advocacy tool to empower local communities and mobilise them politically. The development of numerous information resources – for awareness raising and rights orientation, training and political intervention, as well as simply sharing strategies for sustainable livelihoods – are all active ingredients of an online information intervention on climate change at the local level.

Real community ownership and appropriation of technology is possible in combating climate change

The Huaral Valley project in Peru shows that climate change offers a way of leapfrogging the technology divide and stimulating real community ownership of ICTs in a relatively short space of time. This interaction and know-how can be used in other areas, such as health and education.

Information and knowledge sharing around climate change can serve as a catalyst for broader ICT adoption

Huaral Valley also demonstrates the multiple impacts that different kinds of ICT interventions can have in a single community, encouraging innovation, facilitating knowledge sharing, and fostering collaboration between various governmental authorities and local communities. Huaral Valley shows how, in a relatively short space of time, the seed of a "knowledge community" can be planted using ICTs, resulting in know-how and skills development, and the fair sharing of scarce resources.

Meeting the climate change challenge is a process – and an opportunity to confront the deeper human drama of living together cooperatively, peacefully and sustainably in all spheres of human activity. The conscientious and determined use of ICTs to adapt to climate change will have positive implications for all spheres of our lives and the environment.

6. About the organisations

World Association of Community Radio Broadcasters (AMARC)

www.amarc.org

AMARC is an international NGO serving the community radio movement. It has almost 3,000 members and associates in 110 countries. Its goal is to support and contribute to the development of community and participatory radio along the principles of solidarity and international cooperation.

OneWorld

www.oneworld.net

OneWorld's mission is to harness the democratic potential of information and communication tools to promote human rights and sustainable development. Through partnerships with organisations and individuals sharing their vision, OneWorld aims to transcend geographic and linguistic barriers to give a voice to those typically overlooked by mainstream media and policy makers.

One World South Asia (OWSA) has a decade's expertise in creating and implementing innovative ICT-assisted knowledge solutions, projects, products and services. Most recently, OWSA provided knowledge facilitation support to the National Rural Employment Guarantee Act (NREGA) – the flagship social security programme of the Indian government – and continues to participate in MDG advocacy at the United Nations and in national-level ICT for development policy dialogues in South Asia.

Association for Progressive Communications (APC)

www.apc.org

APC is an international network of civil society organisations dedicated to empowering and supporting people working for social justice and sustainable development through the strategic use ICTs, including the internet. APC is working towards a world in which all people have easy, equal and affordable access to the creative potential of ICTs to improve their lives and create more democratic and egalitarian societies.

The Worldwide Partnership of Panos Institutes (Panos)

www.panos.org

The Panos Institutes work to ensure that information is effectively used to foster public debate, pluralism and democracy. Globally and within nations, Panos works with media and other information actors to enable developing countries to shape and communicate their own development agendas through informed public debate. Panos works to provide the world's poorest people with access to information on issues that affect them, and to make their voices heard on decisions that relate to their lives.

International Institute for Communication and Development (IICD)

www.iicd.org

IICD is a non-profit foundation that specialises in using ICTs as a tool for development. Assistance is given to local partner organisations in Africa, Latin America and the Caribbean to improve development within the fields of education, the environment, good governance, health and livelihood opportunities. IICD's approach includes linking local, national and international organisations as well as formulating and implementing ICT-supported development policies and projects. As an independent foundation, it works with partners from the public, private and not-for-profit sectors.

Swiss Agency for Development and Cooperation (SDC)

www.sdc.admin.ch/ict4d

SDC recognises ICTs as a strategic tool to be used within development programmes to increase the effectiveness and efficiency. SDC supports networks and organisations that focus on strengthening the institutional and organisational basis for the effective use of ICTs. By using knowledge as a resource for development, enhanced by new information and communication technologies, SDC strengthens the voice of developing countries and disadvantaged communities in global, regional and local policy dialogues. It also facilitates South-South cooperation by promoting the active recognition, use and exchange of local and indigenous knowledge. The current focus of its work is to integrate the strategic use of ICTs within SDC programmes and thematic priorities.

Other BCO partners

Canadian International Development Agency (CIDA)

www.acdi-cida.gc.ca

CIDA is Canada's lead agency for development assistance. It has a mandate to support sustainable development in developing countries in order to reduce poverty and contribute to a more secure, equitable and prosperous world. This mandate is carried out through different multilateral and geographic programmes and projects across the globe. CIDA also directly supports governments of developing countries.

Department for International Development (DFID)

www.dfid.gov.uk

DFID is the UK government department responsible for promoting development and the reduction of poverty. The central focus of the government's policy is a commitment to the internationally agreed-upon target to halve the proportion of people living in extreme poverty by 2015, while focusing specifically on how to manage the process of globalisation to benefit poor people. DFID works in partnership with governments, business, civil society and the research community as well as multilateral institutions including the World Bank, United Nations and European Community.

Directorate-General for International Cooperation (DGIS)

www.minbuza.nl

DGIS is responsible for development cooperation policy – its coordination, implementation and funding – for the Dutch Ministry of Foreign Affairs. Good governance, poverty reduction and sustainable development are the main objectives of Dutch development policy. DGIS is fully committed to the MDGs and strives to improve the quality and effectiveness of the Dutch contribution to reaching these goals, promoting partnerships with civil society organisations, enterprises and knowledge institutes in rich and poor countries alike.

Humanist Institute for Cooperation with Developing Countries (Hivos)

www.hivos.nl

Hivos is a non-governmental development organisation based in the Netherlands and guided by humanist values. It wants to contribute to a free, fair and sustainable world in which citizens have equal access to resources, opportunities and markets and can participate actively and equally in decision-making processes that determine their lives, their society and their future. Hivos provides financial, political and institutional support to local NGOs in the developing world and is active in networking, lobbying and exchanging knowledge and expertise.

International Development Research Centre (IDRC)

www.idrc.ca

Canada's IDRC is one of the world's leading institutions in the generation and application of new knowledge to meet the challenges of international development. For more than 30 years, IDRC has worked in close collaboration with researchers from the developing world in their search for the means to build healthier, more equitable and more prosperous societies.

7. About the contributors

Wietse Bruinsma works at the International Institute for Communication and Development (IICD) as country manager for Ecuador and as project manager for IICD's livelihoods programme in Bolivia. His background is on indigenous knowledge systems and management of agricultural information. In addition, he has experience in managing agricultural development programmes and large-scale programmes on higher education on behalf of the Dutch Ministries of Development Cooperation and Education.

Anriette Esterhuysen was executive director of SANGONeT, an internet service provider and training institution for the development sector in South Africa, from 1993 to 2000. Prior to that she worked in development and human rights organisations involved in the struggle against apartheid in South Africa. She is a founder of Women'sNet in South Africa. Currently she is the executive director of the Association for Progressive Communications (APC).

Alan Finlay has worked in the ICT4D sector for the past ten years in the areas of project development, research, writing and editing. He runs the research consultancy Open Research, specialising in ICT and media research and e-waste. For two years he was the Gauteng coordinator of the Green E-Waste Channel, amongst other things, setting up collection projects at the municipal level. As part of a group of environmental and waste activists he advocated for e-waste policy take-up in business and government, resulting in the formation of the eWaste Association of South Africa. In 2008 he completed the first national baseline study into e-waste in South Africa.

Bruno Güemes Delgado has completed studies in Madrid and the UK in the fields of the environment and international cooperation. He has worked in such diverse areas as land management planning, institutional strengthening and sustainable development, among others, in a number of different Latin American countries. He is currently working for the international cooperation agency Progressio and its Peruvian counterpart, CEPES.

Patrick Peter Kalas completed his master's degree in political science at the Graduate Institute in Geneva, Switzerland, investigating Public-Private/Multi-stakeholder Partnerships for Delivery of Water and Sanitation Services. After experiences with several international NGOs, he joined Mr. Adolf Ogi, the UN Special Adviser to the Secretary-General on Sport for Development and Peace. After his involvement during the two phases of the World Summit on the Information Society (WSIS), he joined the Swiss Agency for Development and Cooperation (SDC) in January 2006 in the area of ICTs for Development.

Karel Novotný is a Czech sociologist living in Montevideo, Uruguay. Since 2004, he has worked as the knowledge sharing coordinator of the APC Strategic Technologies and Network Development Programme (formerly the Strategic Use and Capacity Building Programme). Karel is involved in a number of projects developed by APC, with a particular focus on free and open source software (FOSS), wireless networking and training material development.

Kishor Pradhan is the deputy regional director and country representative for Nepal for Panos South Asia. He has worked in the areas of ICT4D since 1992, associated with various international organisations. At Panos he also manages the Media Pluralism programmes which include various ICT4D and media development activities. He has published various papers on ICT4D and media development issues in various international publications. He has an academic background in development anthropology and mass communications.

Naimur Rahman is the director of OneWorld South Asia, and in this capacity he also serves on the executive committee of the Global Knowledge Partnership (GKP). A specialist in ICT4D innovation and incubation, Naimur has more than eighteen years of experience in strategic ICT advisory services, programmatic delivery in international development, information management and knowledge systems. Prior to OneWorld, Naimur was associated with ICT innovations within social sector development initiatives, and worked in various capacities in civil society, the corporate sector, bilateral donor agencies and the government.

Denise Senmartin works as knowledge sharing officer at the International Institute for Communication and Development (IICD) in The Hague, focusing on livelihoods and agriculture, governance and environment thematic areas. Previously she worked at the Development Gateway Foundation and the World Bank in Washington, DC, and for local development organisations in Argentina, Cambodia and the USA. Denise studied social work in Argentina and international development at the School of Advanced International Studies, Johns Hopkins University, USA.

Marcelo Solervicens has been the secretary general of the World Association of Community Radio Broadcasters (AMARC) since 2003. He holds a PhD in political sciences from UQAM, Montreal, Canada. He has wide-ranging experience in the field of communications and particularly community radio. He has also worked with the NGOs CUSO and Oxfam-Quebec-CEDAL in the field of international cooperation.

In a twenty-year career in communication for development, Kitty Warnock has been involved in environment, green economics, poverty, gender and conflict issues as a researcher, writer and project manager, working mainly in Africa and also in the Middle East. Currently, a major focus of her work is monitoring and evaluation of communication for development projects.

8. Annexes to Section 2: Including the excluded

Annex 1

Mapping strategic linkages between ICTs and climate change:

The strategic linkages of ICTs playing a role in climate change can be summarised within the "5 I's":

(1) Information

- Creating and raising awareness about the direct and indirect impacts of climate change, especially at the grassroots level.
- Disseminating and diffusing critical local knowledge of local solutions among communities to galvanise action.
- Capturing and gathering information to ensure upstream and downstream information flows and information management systems.

(2) Inclusiveness

- Enabling people to have ownership of the process to formulate localised and just coping strategies.
- Enabling people's participation in climate change adaptation processes and their input into policy and implementation plans.
- Facilitating political advocacy, policy work and negotiations at national and international levels.

(3) Institutional strengthening

- Helping people set up institutional support systems that will support climate change adaptation (i.e., through ICT-enabled institutional strengthening and networking among grassroots organisations and communities themselves).

(4) Incentives

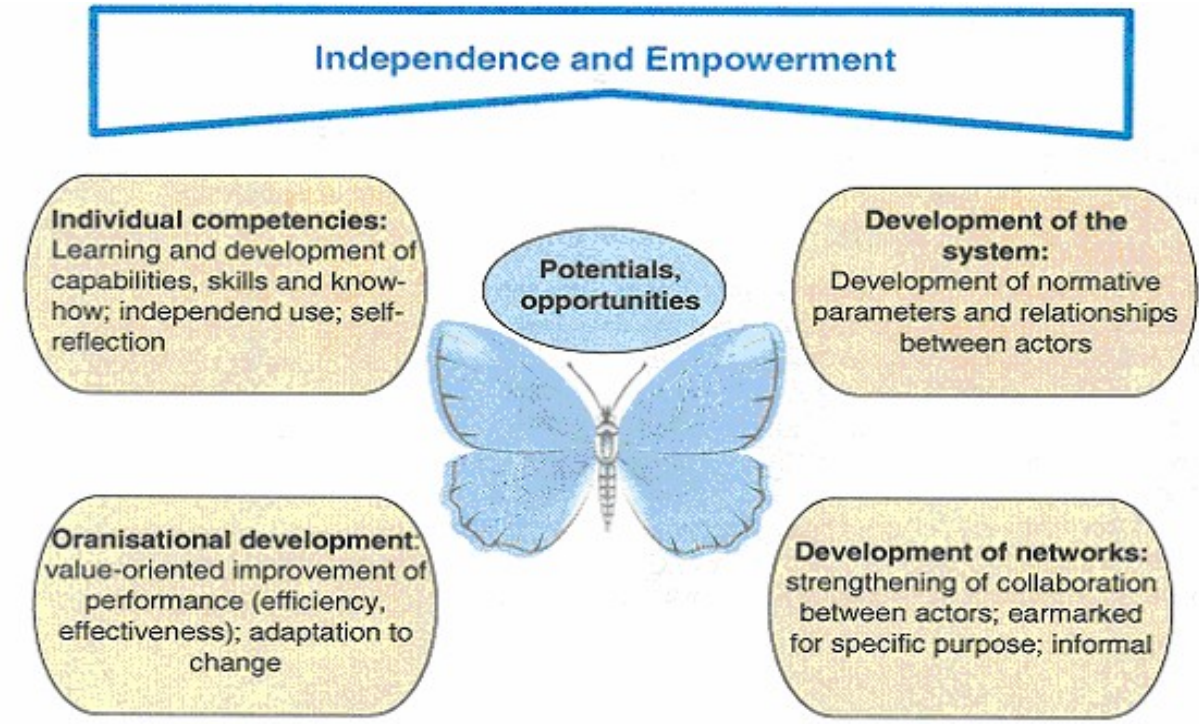
- Using ICTs to help monitor progress and provide incentives to those who adhere to good practices on the ground.

(5) Innovation

- Facilitating innovative processes for defining, capturing and sharing localised coping strategies among communities.

Annex 2

The CapDev Butterfly: A capacity development model with four dimensions



Source: SDC Working Paper "Capacity Development in SDC" April 2006

The CapDev Butterfly represents a metaphor in which the four wings correspond to the dimensions of the individual, the network, the organisation and the system. The butterfly orients itself on potentials and opportunities, and flies only when it moves its wings in a coordinated way. With one wing alone, it cannot move forward. In other words, an organisation's development is successful at the moment when individual competencies are strengthened, internal processes and structures are adapted, and relationships to other organisations are improved. The purpose of the "butterfly" is for participants to attain a specific performance, both independently and in cooperation with others. The process leads to empowerment if it provides actors with access to resources and allows them to articulate their interests, demand their rights and participate in social and political processes. Empowerment is aimed at a transformation in the balance of power in favour of disadvantaged actors and thus at the elimination of the causes of poverty.

9. Abbreviations and selected links

ALT – Andrew Lees Trust – www.andrewleestrust.org.uk

AMARC – World Association of Community Radio Broadcasters – www.amarc.org

APC – Association for Progressive Communications – www.apc.org

BCO – Building Communication Opportunities –www.bcoalliance.org

C4D – communication for development

CEPES – Centro Peruano de Estudios Sociales (Peruvian Social Studies Centre) – www.cepes.org.pe

CIDA – Canadian International Development Agency – www.acdi-cida.gc.ca

DFID – Department for International Development of the United Kingdom – www.dfid.gov.uk

DGIS – Directorate-General for International Cooperation of the Dutch Ministry of Foreign Affairs – www.minbuza.nl

FAO – Food and Agriculture Organisation of the United Nations – www.fao.org

GKP – Global Knowledge Partnership – www.globalknowledgepartnership.org

Hivos – Humanistisch Instituut voor Ontwikkelingssamenwerking (Humanist Institute for Cooperation with Developing Countries) – www.hivos.nl

ICTs – information and communication technologies

ICT4D – information and communication technologies for development

IDRC – International Development Research Centre – www.idrc.ca

IICD – International Institute for Communication and Development – www.iicd.org

IIED – International Institute for Environment and Development – www.iied.org

IFAD – International Fund for Agricultural Development – www.ifad.org

IKS-CCA – Integrated Knowledge System on Climate Change Adaptation

InSTEDD – Innovative Support to Emergencies Diseases and Disasters – instedd.org

IPCC – Intergovernmental Panel on Climate Change – www.ipcc.ch

MDGs – Millennium Development Goals – www.un.org/millenniumgoals

NGO – non-governmental organisation

OECD – Organisation for Economic Co-operation and Development – www.oecd.org

Open Research – www.openresearch.co.za

OWA – One World Africa – www.africa.oneworld.net

OWSA – One World South Asia – www.southasia.oneworld.net

Panos London – www.panos.org.uk

Panos South Asia – www.panossouthasia.org

PROTEGE QV – Promotion des Technologies Garantes de l'Environnement et de la Qualité de Vie (Promotion of Technologies that Guarantee the Environment and Quality of Life) – www.protegeqv.org

RITS – Rede de Informações para o Terceiro Setor (Information Network for the Third Sector) – www.rits.org.br

SDC – Swiss Agency for Development and Cooperation – www.sdc.admin.ch/ict4d

VoIP – voice over internet protocol

UNFCCC – United Nations Framework Convention on Climate Change – unfccc.int

UNDP – United Nations Development Programme – www.undp.org

UNU-IAS TKI – United Nations University Institute of Advanced Studies Traditional Knowledge Initiative – www.unutki.org